United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with Virginia Polytechnic Institute and State University and Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation

Soil Survey of Russell County, Virginia

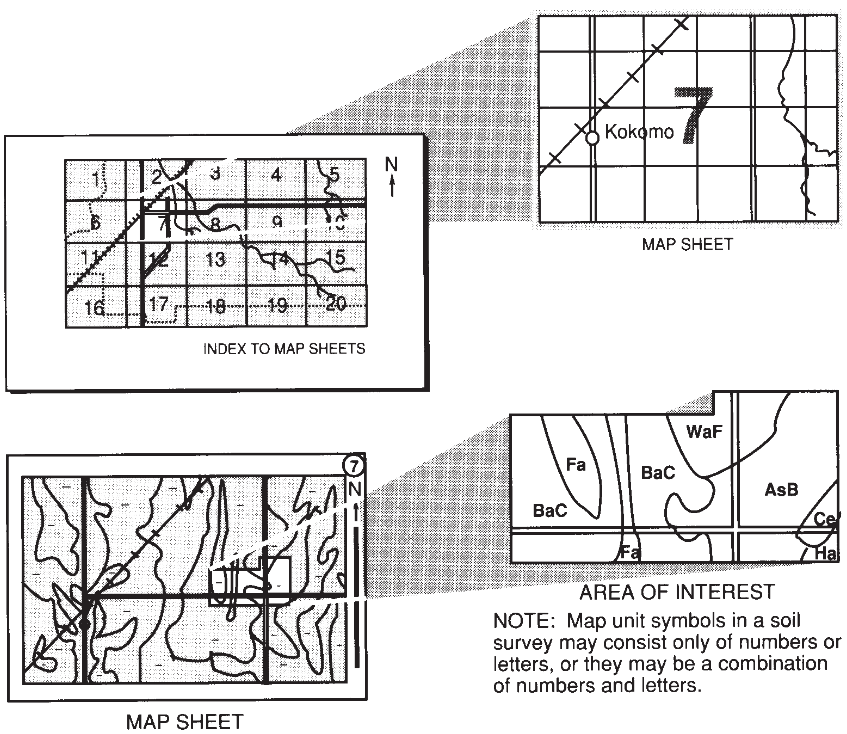
How To Use This Soil Survey

The detailed soil maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and go to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Go to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



National Cooperative Soil Survey

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey. This survey was made cooperatively by the Natural Resources Conservation Service; the Virginia Polytechnic Institute and State University; and the Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation. The survey is part of the technical assistance furnished to the Clinch Valley Soil and Water Conservation District. The Russell County Board of Supervisors provided financial assistance for the survey.

Major fieldwork for this soil survey was completed in 2005. Soil names and descriptions were approved in 2006. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2005. The most current official data are available at http://websoilsurvey.nrcs.usda.gov/app/.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

Nondiscrimination Statement

Cover Caption

Baled rolls of fescue and white clover on Frederick silt loam, 8 to 15 percent slopes, eroded, located near Lebanon. Frederick silt loam, 15 to 25 percent slopes, eroded, is on the hills in the background.

Additional information about the Nation's natural resources is available online from the Natural Resources Conservation Service at http://www.nrcs.usda.gov.

Contents

Issued 2007

Foreword

This soil survey contain information that affects land use planning in Russell County. It includes predictions of soil behavior for selected land uses. The survey highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use the survey to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described, and information on specific uses is given. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

John A. Bricker
State Conservationist
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Soil Survey of
Russell County, Virginia

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Fieldwork by Thomas D. Adkins, Robert R. Dobos, Julia Waller-Eling, and
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United States Department of Agriculture, Natural Resources Conservation Service,
in cooperation with
Virginia Polytechnic Institute and State University and Virginia Department of
Conservation and Recreation, Division of Soil and Water Conservation

RUSSELL COUNTY is in the southwestern part of Virginia (fig. 1). It is bounded on the north by Dickenson and Buchanan Counties, on the east by Tazewell County, on the south by Smyth and Washington Counties, and on the west by Scott and Wise Counties. The county seat is Lebanon, which is located near the center of the county. Russell County is about 35 miles north of Bristol, 155 miles southwest of Roanoke, and 328 miles southwest of Richmond. The county has a total area of 306,900 acres, or about 480 square miles. In 2000, the total population of the county was 30,308 *(20)*.

This survey updates a previous soil survey of Russell County that was published in 1945 *(11)*. It provides additional information and has maps with a photographic background.

General Nature of the Survey Area

This section provides general information about the survey area. It describes early history; physiography, geology, relief, and drainage; transportation facilities; land use; water supply; and climate.

Early History

When hunters, woodsmen, and trappers came to Clinch Valley in the 1600's, the first explorers were told of an area the Indians called Middle Ground. Middle Ground was a network of Indian trails; a crossroads for both the Cherokee and Shawnee Nations. In this area, Indians would congregate and hold conferences, hunting parties would gather, and goods would be traded and bartered among the tribes.

The area of present-day Russell County was mostly uninhabited by both Indians and white men until about 1770. At that time a hunter by the name of Jacob Castle, from Rockbridge County, wandered through the wilderness and came into the northwestern part of the survey area. He had traded a hunting knife to a band of Indians for a large tract of land which he called Castle Woods, later renamed Castlewood.

The first settlements were scattered neighborhoods located in and around one of

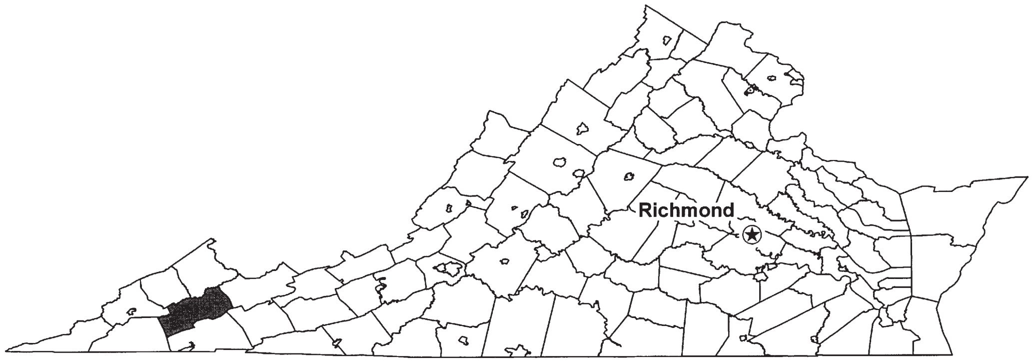

Figure 1.—Location of Russell County in Virginia.

seven forts dispersed throughout the survey area. Other less extensive settlements included Moccasin Creek, Elk Garden, Cedar Creek, Copper Creek, Thompson Creek, and Swords Creek. In 1773, permission was given by the county court to build its first mill, known as Jesses Mill, on Mill Creek.

From 1773 to 1775, Daniel Boone and his family stayed at Moore's Fort near Castlewood. While at Moore's Fort, Daniel Boone was appointed commander over several of the nearby forts by General William Russell. Boone and his family would later move on, crossing the Cumberland Gap and settling in Kentucky.

Russell County was formed from part of Washington County in May of 1786. The county was named for General William Russell, who introduced a bill in the Virginia State Legislature to form the county. General Russell was one of the signees of the Fincastle Resolutions, which were a forerunner to the Declaration of Independence. Besides being a brother-in-law to Patrick Henry, Russell was also a General in the American Revolution. He died in 1793, and his body is entombed at Arlington National Cemetery in Washington D.C.

The county seat and first courthouse was initially established in Castlewood, and later moved to Lebanon. The town of Lebanon was established on January 15, 1819, and granted its town charter on January 4, 1831. Lebanon was incorporated in 1835. In 1872, a major fire devastated the town. It burned down many of its buildings, including the county courthouse. Eventually, the courthouse was rebuilt along with the rest of the town.

In 1861, during the Civil War, Russell County wanted to provide support and troops for the war effort. It assembled a total of 16 regiments to assist in the fighting. Local historians have concluded that due to the "county's isolated position" in southwest Virginia, the county was spared the devastating effects of war by the Union armies and the problems associated with reconstruction after the war.

In the 1890's, the Norfolk and Western Railway started building a railway into the coalfields of southwest Virginia.

Coal is considered Virginia's most abundant indigenous energy resource. Bituminous coal is produced from over two dozen Pennsylvanian-age seams that are part of the Central Appalachian Coalfield that runs through the northern part of Russell County. These seams can vary from about 12 inches to well over 8 feet in thickness. Coal mined in southwest Virginia produces higher BTU's and has a lower sulfur content, thus making it a lucrative product for coal-burning power plants that generate electricity.

In 1904, the first commercial mine opened at Dante. By 1917, both surface and underground mining operations had produced a total of 2,000,540 tons of coal. In 1990, the total production of coal mined had increased to 47 million tons. In recent

years, however, coal production has been declining. In 1999, only 27 million tons of coal were produced in Russell County.

Physiography, Geology, Relief, and Drainage

Russell County is located in the Appalachian Highlands and is divided into two physiographic provinces. The Cumberland Plateau and Mountains physiographic province is located in the northern part of the county, and the Southern Appalachian Ridges and Valleys physiographic province lies to the south. The county is roughly rectangular in shape, about 34 miles long and 15 miles wide.

The county is bounded by two Appalachian ranges—Sandy Ridge and Big “A” Mountain to the north and Clinch Mountain to the southeast. The Clinch River forms the dividing line between Washington and Smyth Counties. To the east is Tazewell County, and to the west are Scott and Wise Counties. Relief in the county is a result of the folding and faulting of sedimentary rocks by mountain-building processes. During a long period of geologic erosion, ridges formed in areas of the more resistant rocks in the mountains and valleys formed in areas of the less resistant rocks. Slopes range from gentle sloping to very steep.

Across the northern third of the county, the Cumberland Plateau and Mountains physiographic province consists of a rugged mountainous region of high relief. Elevations along Sandy Ridge range from 2,400 feet to 3,200 feet in elevation. The area consists of broad to narrow ridges dissected by numerous drainageways. The sides of these mountains are steep and very steep.

Beartown Mountain is located in the Southern Appalachian Ridges and Valleys physiographic province in the southeastern part of the county. It is the fourth highest mountain in the State, with an elevation of 4,690 feet at its highest point. Most soils on the mountains are stony, very stony, or extremely stony. In the northern part of the county, Big “A” Mountain (at an elevation of 3,706 feet) is located on the Russell and Buchanan County line. Other prominent but isolated ridges across the county that are underlain with sandstone bedrock include House and Barn Mountain, River Mountain, and Buffalo Mountain.

The valleys are mainly those made by the Clinch River and Cedar, Moccasin, Copper, and Indian Creeks. Slope ranges from gentle sloping to very steep. Near some mountains and at the base of some slopes located in the valleys are limestone sinkholes. These sinkholes range from a few feet to several hundred feet in diameter.

The Clinch River flows in a southwesterly direction across the northern part of the county. It is bounded to the north by Sandy Ridge and to the south by Clinch Mountain. Approximately 80 percent of the county is drained by the Clinch River, which is a tributary of the Tennessee River. The extreme southeastern part of the county is drained by Tumbling Creek. In the southwestern part of the county, the Copper Creek Watershed empties into the Clinch River. The Moccasin Creek Watershed empties into the North Fork of the Holston River below Weber City in Scott County.

Transportation Facilities

U.S. Highway 19 in the southeastern section of the county intersects with U.S. Highway 460 at Claypool Hill, in Tazewell County, and runs south to Abingdon before intersecting with Interstate Highway 81. U.S. Highway Alternate 58, U.S. Highway 65, U.S. Highway 71, U.S. Highway 80, and U.S. Highway 67 also serve the county. Secondary roads are graveled and kept in fair to good condition year-round by the State Highway Department.

Coal and lumber are transported by railroad from the northern parts of the county. Interstate carriers provide trucking freight service. Local bus service and overnight package delivery are also available.

Russell County is serviced by several commercial airports that are available in nearby counties. These airports include the Tri-Cities Regional Airport in Bristol, Tennessee, the Virginia Highlands Airport in Abingdon, and the Tazewell County Airport at Claypool Hill, in Richland, Virginia.

The nearest port authority from Lebanon is 290 miles northeast at Richmond and 360 miles east at Norfolk.

Land Use

In 2002, the county had 1,128 farms. These farms covered about 168,903 acres. Land in farms is generally 43 percent cropland, 31 percent permanent pasture, 25 percent woodland, and about 1 percent other uses. From 1997 to 2002, the number of farms decreased. The average size of the farms, however, increased *(12)*.

Soils in valleys are suited to pasture, hay, and grain crops. The nearly level to moderately steep soils are used for crop production, such as tobacco production. The primary cash crop grown in Russell County is burley tobacco. The county ranks fourth in Virginia in tobacco production.

The moderately steep to very steep soils and the soils in areas that have rock outcrops are used as pasture or woodland.

Timber stands are on marginal sites. Soils that have a low available water capacity and are steep support oak-pine forest. Soils that have a higher available water capacity and are on more gentle slopes support upland oak-hickory stands that produce a large amount of high-quality timber.

Residential development is expanding into the rural areas. Commercial development is occurring along U.S. Highway Route 19, especially between Lebanon and Hansonville. Industrial development is concentrated in and around Lebanon, with the creation of three industrial parks within the town limits. Manufactured products include mine safety dust and crushed stone, clothing apparel, automotive plastic parts, and cast aluminum parts. Non-manufacturing products include nearby electric utilities and health care services.

Recreational facilities include Pinnacle Natural Area Preserve, a 68-acre preserve along the Big Cedar Creek and Clinch River near Lebanon. This preserve is named after the limestone rock formation that rises to 600 feet in height above Big Cedar Creek. It has a variety of vegetation and wildlife and provides excellent opportunities for rafting, fishing, and hiking.

The Clinch Mountain Wildlife Management Area is partly located in Russell County and is part of Virginia's Department of Game and Inland Fisheries Preserve. The area is 25,477 acres in size and located in southwest Virginia. It encompasses parts of Smyth, Washington, Russell, and Tazewell Counties. It provides excellent opportunities for hunting, fishing, horseback riding, wildlife viewing, hiking, and nature photography.

Water Supply

Two major sources of water are available to Russell County residents. One source is the springs and wells located throughout the more isolated areas of the county. The quantity of ground water available is often influenced by seasonal precipitation. In areas underlain by limestone, ground water is "hard," containing dissolved minerals such as calcium carbonate. In areas underlain by acid shale, iron and sulfur influence the quality of water.

Other sources of water include the Big Cedar Creek Watershed, which supplies the town of Lebanon and the surrounding area with drinking water. The watershed makes up 58,000 acres and is part of the Clinch-Powell River Basin. It is one of the more intensively used watersheds within the county.

Climate

The northern one-third portion of Russell County is in the Cumberland Plateau and Mountains Major Land Resource Area. Its climate information is represented in table 1, part I, table 2, part I, and table 3, part I. The southern two-thirds of the county is in the Southern Appalachian Ridges and Valleys Major Land Resource Area. Its climate information is represented in table 1, part II, table 2, part II, and table 3, part II.

Table 1, parts I and II, give data on temperature and precipitation for the survey area as recorded at Grundy and Abingdon, Virginia, in the period 1971 to 2000. Table 2, parts I and II, show probable dates of the first freeze in fall and the last freeze in spring. Table 3, parts I and II, provide data on the length of the growing season.

In winter, the average temperature is 36.7 degrees F at Grundy and 36.4 degrees F at Abingdon. The average daily minimum temperature is 24.8 degrees at Grundy and 25.4 degrees at Abingdon. The lowest recorded temperature at Grundy is -14 degrees, occurring on January 21, 1985, and that at Abingdon is -21 degrees, occurring on January 21, 1985. In summer, the average temperature is 73.3 degrees at Grundy and 71.3 degrees at Abingdon. The average daily maximum temperature is 85.6 degrees at Grundy and 83.9 degrees at Abingdon. The highest temperature on record is 102 degrees at Grundy, recorded on September 15, 1998, and 100 degrees at Abingdon, recorded on August 17, 1988.

Growing degree days are shown in table 1. They are equivalent to “heat units.” During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The average annual total precipitation over Russell County ranges from 44 inches in the lowest valley areas to slightly more than 50 inches at the highest elevations along the county’s northern and southern borders. The average annual total precipitation at Grundy is 45.98 inches. Of this total, about 29 to 31 inches, or 60 percent, usually falls during April through October. The average annual total precipitation at Abingdon is 47.41 inches. Of this total, about 21.08 inches, or about 44 percent, usually falls in May through September. The growing season for most crops falls within these periods. The heaviest 1-day rainfall during the period of record was 4.14 inches at Grundy, recorded on April 4, 1987, and 3.44 inches at Abingdon, recorded on July 15, 1973. Thunderstorms occur on about 43 days each year, and most occur between May and August.

The average annual seasonal snowfall is somewhat dependent on elevation. About 12 inches is common in the lowest valley areas, and more than 24 inches is common at the higher elevations. The average seasonal snowfall is 19.7 inches at Grundy and 16.2 inches at Abingdon. The greatest snow depth at any one time during the period of record was 20 inches at Grundy, recorded on April 5, 1987, and 18 inches at Abingdon, recorded on January 8, 1996. On an average, 17 days per year have at least 1 inch of snow on the ground in Grundy and 14 days per year have at least 1 inch of snow on the ground in Abingdon. At the highest elevations in the county, it is estimated that as many as 30 days per year have some snow on the ground. The heaviest 1-day snowfall on record is 15.0 inches at Grundy, recorded on November 25, 1950, and 12.0 inches at Abingdon, recorded on February 2, 1996.

The average relative humidity in mid-afternoon is about 48 percent in April and about 60 percent in mid-winter. Humidity is higher at night, and the average at dawn is about 80 percent in winter and 90 percent in summer. The sun shines 63 percent of the time possible in summer and 42 percent in winter. The prevailing wind is from the southwest; it is from the northeast during August through October. Average windspeed is highest, around 7 miles per hour, in March and April.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over

long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those soils in adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

Detailed Soil Map Units

The map units delineated on the detailed soil maps represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The contrasting components are mentioned in the map unit descriptions. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase

commonly indicates a feature that affects use or management. For example, Frederick silt loam, 8 to 15 percent slopes, eroded, is a phase of the Frederick series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes. A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Carbo-Rock outcrop complex, 8 to 25 percent slopes, eroded, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits, quarry, is an example.

Table 4 lists the map units in this survey area. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

1E—Berks-Chiswell complex, 35 to 55 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Backslopes
Size of areas: 50 to 1,000 acres

Map Unit Composition

Note: These Berks and Chiswell soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Berks and similar soils: Typically 50 percent, ranging from about 45 to 55 percent
Chiswell and similar soils: Typically 40 percent, ranging from about 35 to 45 percent

Typical Profile

Berks

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 6 inches—dark brown channery silt loam

Subsoil:
6 to 32 inches—yellowish brown very channery silt loam

Substratum:
32 to 38 inches—yellowish brown extremely channery silt loam

Hard bedrock:
38 inches—shale bedrock

Chiswell

Surface layer:
0 to 2 inches—very dark grayish brown very channery silt loam

Subsoil:
2 to 7 inches—yellowish brown very channery silt loam

Substratum:
7 to 12 inches—yellowish brown very channery silt loam

Soft bedrock:
12 to 22 inches—shale bedrock

Minor Components

Dissimilar components:
- Carbo soils, which have more clay and fewer rock fragments in the soil than the Berks and Chiswell soils and are moderately deep to limestone bedrock; in similar landform positions and generally associated with outcrops of limestone bedrock
- Groseclose soils, which have more clay than the Berks and Chiswell soils and are very deep to bedrock; in similar landform positions
- Soils which have more clay and fewer rock fragments in the soil than the Berks and Chiswell soils and are shallow to limestone bedrock; in similar landform positions and generally associated with outcrops of limestone bedrock
- Shelocta soils, which have fewer rock fragments in the soil than the Berks and Chiswell soils and are very deep to bedrock; on footslopes
- Holly soils, which are poorly drained; adjacent to some drainageways
- Areas with outcrops of sandstone bedrock; in landform positions similar to those of the Berks and Chiswell soils

Similar components:
- Gilpin soils, which have fewer rock fragments than the Berks and Chiswell soils; in similar landform positions
- Soils that are deep to shale bedrock; in landform positions similar to those of the Berks and Chiswell soils
- Soils that have pockets of argillic soil material; in landform positions similar to those of the Berks and Chiswell soils

Soil Properties and Qualities

Available water capacity: Berks—low (about 3.7 inches); Chiswell—very low (about 1.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Berks—moderately deep (20 to 40 inches); Chiswell—shallow (10 to 20 inches)
Depth to root-restrictive feature: Berks—20 to 40 inches to bedrock (lithic); Chiswell—10 to 20 inches to bedrock (paralithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Channery, loamy residuum weathered from shale and siltstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative

impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: JJ
Hydric soils: No

1F—Berks-Chiswell complex, 55 to 80 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Backslopes
Size of areas: 50 to 1,000 acres

Map Unit Composition

Note: These Berks and Chiswell soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Berks and similar soils: Typically 45 percent, ranging from about 40 to 50 percent
Chiswell and similar soils: Typically 45 percent, ranging from about 40 to 50 percent

Typical Profile

Berks

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 6 inches—dark brown channery silt loam

Subsoil:
6 to 32 inches—yellowish brown very channery silt loam

Substratum:
32 to 38 inches—yellowish brown extremely channery silt loam

Hard bedrock:
38 inches—shale bedrock

Chiswell

Surface layer:
0 to 2 inches—very dark grayish brown very channery silt loam

Subsoil:
2 to 7 inches—yellowish brown very channery silt loam

Substratum:
7 to 12 inches—yellowish brown very channery silt loam

Soft bedrock:
12 to 22 inches—shale bedrock

Minor Components

Dissimilar components:
- Carbo soils, which have more clay and fewer rock fragments in the soil than the Berks and Chiswell soils and are moderately deep to limestone bedrock; in similar landform positions and generally associated with outcrops of limestone bedrock
- Groseclose soils, which have more clay than the Berks and Chiswell soils and are very deep to bedrock; in similar landform positions
- Soils which have more clay and fewer rock fragments in the soil than the Berks and Chiswell soils and are shallow to bedrock; in similar landform positions and generally associated with outcrops of limestone bedrock
- Shelocta soils, which have fewer rock fragments in the soil than the Berks and Chiswell soils and are very deep to bedrock; on footslopes
- Holly soils, which are poorly drained; adjacent to some drainageways
- Areas with outcrops of sandstone bedrock; in landform positions similar to those of the Berks and Chiswell soils

Similar components:
- Gilpin soils, which have fewer rock fragments than the Berks and Chiswell soils; in similar landform positions
- Soils that are deep to shale bedrock; in landform positions similar to those of the Berks and Chiswell soils
- Soils that have pockets of argillic soil material; in landform positions similar to those of the Berks and Chiswell soils
- Calvin soils, which are redder than the Berks and Chiswell soils; in similar landform positions

Soil Properties and Qualities

Available water capacity: Berks—low (about 3.7 inches); Chiswell—very low (about 1.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Berks—moderately deep (20 to 40 inches); Chiswell—shallow (10 to 20 inches)
Depth to root-restrictive feature: Berks—20 to 40 inches to bedrock (lithic); Chiswell—10 to 20 inches to bedrock (paralithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Channery, loamy residuum weathered from shale and siltstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: JJ
Hydric soils: No

2D—Berks-Gilpin complex, 15 to 35 percent slopes

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125) and Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains on uplands
Position on the landform: Summits and shoulders
Size of areas: 5 to 60 acres

Map Unit Composition

Note: These Berks and Gilpin soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Berks and similar soils: Typically 45 percent, ranging from about 40 to 50 percent
Gilpin and similar soils: Typically 40 percent, ranging from about 35 to 45 percent

Typical Profile

Berks

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 6 inches—dark brown channery silt loam

Subsoil:
6 to 32 inches—yellowish brown very channery silt loam

Substratum:
32 to 38 inches—yellowish brown extremely channery silt loam

Hard bedrock:
38 inches—shale bedrock

Gilpin

Organic layer:
0 to 1 inch—moderately decomposed plant material

Surface layer:
1 to 3 inches—brown silt loam

Subsoil:
3 to 7 inches—dark yellowish brown silt loam
7 to 24 inches—yellowish brown silty clay loam
24 to 31 inches—yellowish brown channery silt loam

Soft bedrock:
31 inches—shale bedrock

Minor Components

Dissimilar components:
- Wallen soils, which have more rock fragments in the soil than the Gilpin soil and more sand than the Berks and Gilpin soils; in similar landform positions
- Weikert soils, which have more rock fragments in the soil than the Berks and Gilpin soils and are shallow to bedrock; in similar landform positions
- Areas with outcrops of sandstone bedrock; in landform positions similar to those of the Berks and Gilpin soils
- Soils that are moderately well drained and very deep to bedrock; on treads, risers, footslopes, and fans
- Rough soils, which are very shallow to bedrock; on landforms similar to those of the Berks and Gilpin soils
- Shelocta soils, which have fewer rock fragments in the soil than the Berks and Gilpin soils and are very deep to bedrock; on footslopes
- Tumbling soils, which have more clay than the Berks and Gilpin soils and are very deep to bedrock; on footslopes

Similar components:
- Lily soils, which are moderately deep to sandstone bedrock and have more sand in the subsoil than the Berks and Gilpin soils; in similar landform positions
- Soils that have more clay in the subsoil than the Berks and Gilpin soils; in similar landform positions
- Soils that are deep to shale bedrock; in landforms positions similar to those of the Berks and Gilpin soils

Soil Properties and Qualities

Available water capacity: Berks—low (about 3.7 inches); Gilpin—low (about 4.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Berks—channery, loamy residuum weathered from shale and siltstone; Gilpin—fine-loamy residuum weathered from shale and siltstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

Suitability: Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Moderately suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The use of mechanical planting equipment is impractical because of the slope.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: Berks—JJ; Gilpin—U
Hydric soils: No

2E—Berks-Gilpin complex, 35 to 55 percent slopes

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125) and Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Mountains and hills on uplands
Position on the landform: Backslopes
Size of areas: 5 to 600 acres

Map Unit Composition

Note: These Berks and Gilpin soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Berks and similar soils: Typically 45 percent, ranging from about 40 to 50 percent
Gilpin and similar soils: Typically 40 percent, ranging from about 35 to 45 percent

Typical Profile

Berks

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 6 inches—dark brown channery silt loam

Subsoil:
6 to 32 inches—yellowish brown very channery silt loam

Substratum:
32 to 38 inches—yellowish brown extremely channery silt loam

Hard bedrock:
38 inches—shale bedrock

Gilpin

Organic layer:
0 to 1 inch—moderately decomposed plant material

Surface layer:
1 to 3 inches—brown silt loam

Subsoil:
3 to 7 inches—dark yellowish brown silt loam
7 to 24 inches—yellowish brown silty clay loam
24 to 31 inches—yellowish brown channery silt loam

Soft bedrock:
31 inches—shale bedrock

Minor Components

Dissimilar components:
- Oriskany soils, which have more rock fragments in the soil than the Gilpin soil and have more rock fragments on the surface; on footslopes
- Wallen soils, which have more rock fragments in the soil than the Gilpin soil and more sand; in similar landform positions
- Weikert soils, which have more rock fragments in the soil than the Gilpin soil and are shallow to bedrock; in similar landform positions
- Holly soils, which are poorly drained; adjacent to some drainageways
- Areas with outcrops of sandstone bedrock; in landform positions similar to those of the Berks and Gilpin soils
- Soils that are very deep to bedrock and are moderately well drained; on treads, risers, footslopes, and fans
- Rough soils, which are very shallow to bedrock; in landform positions similar to those of the Berks and Gilpin soils
- Shelocta soils, which have fewer rock fragments in the soil than the Berks and Gilpin soils and are very deep to bedrock; on footslopes
- Tumbling soils, which have more clay than the Berks and Gilpin soils and are very deep to bedrock; on footslopes

Similar components:
- Lily soils, which are moderately deep to sandstone bedrock and have more sand in the subsoil than the Berks and Gilpin soils; in similar landform positions

- Soils that are deep to bedrock; in landform positions similar to those of the Berks and Gilpin soils

Soil Properties and Qualities

Available water capacity: Berks—low (about 3.7 inches); Gilpin—low (about 4.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Berks—channery, loamy residuum weathered from shale and siltstone; Gilpin—fine-loamy residuum weathered from shale and siltstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Moderately suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: Berks—JJ; Gilpin—U
Hydric soils: No

2F—Berks-Gilpin complex, 55 to 70 percent slopes

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125) and Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Mountains and hills on uplands
Position on the landform: Backslopes
Size of areas: 25 to 220 acres

Map Unit Composition

Note: These Berks and Gilpin soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Berks and similar soils: Typically 45 percent, ranging from about 40 to 50 percent
Gilpin and similar soils: Typically 40 percent, ranging from about 35 to 45 percent

Typical Profile

Berks

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 6 inches—dark brown channery silt loam

Subsoil:
6 to 32 inches—yellowish brown very channery silt loam

Substratum:
32 to 38 inches—yellowish brown extremely channery silt loam

Hard bedrock:
38 inches—shale bedrock

Gilpin

Organic layer:
0 to 1 inch—moderately decomposed plant material

Surface layer:
1 to 3 inches—brown silt loam

Subsoil:
3 to 7 inches—dark yellowish brown silt loam
7 to 24 inches—yellowish brown silty clay loam
24 to 31 inches—yellowish brown channery silt loam

Soft bedrock:
31 inches—shale bedrock

Minor Components

Dissimilar components:
- Areas that contain rock outcrops; in landform positions similar to those of the Berks and Gilpin soils
- Oriskany soils, which have more rock fragments in the soil than the Gilpin soil and have more rock fragments on the surface; on footslopes
- Wallen soils, which have more rock fragments in the soil than the Gilpin soil and more sand; in similar landform positions
- Weikert soils, which have more rock fragments in the soil than the Gilpin soil and are shallow to bedrock; in similar landform positions
- Holly soils, which are poorly drained; adjacent to some drainageways
- Soils that are very deep to bedrock and are moderately well drained; on treads, risers, footslopes, and fans
- Rough soils, which are very shallow to bedrock; in landform positions similar to those of the Berks and Gilpin soils
- Shelocta soils, which have fewer rock fragments in the soil than the Berks soil and are very deep to bedrock; on footslopes
- Tumbling soils, which have more clay than the Berks and Gilpin soils and are very deep to bedrock; on footslopes

Similar components:
- Lily soils, which are moderately deep to sandstone bedrock and have more sand in the subsoil than the Berks and Gilpin soils; in similar landform positions
- Soils that are deep to bedrock; in landform positions similar to those of the Berks and Gilpin soils

Soil Properties and Qualities

Available water capacity: Berks—low (about 3.7 inches); Gilpin—low (about 4.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Berks—channery, loamy residuum weathered from shale and siltstone; Gilpin—fine-loamy residuum weathered from shale and siltstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Moderately suited to chestnut oak

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: Berks—JJ; Gilpin—U
Hydric soils: No

3C—Berks-Groseclose complex, 8 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Summits and shoulders
Size of areas: 10 to 50 acres

Map Unit Composition

Note: These Berks and Groseclose soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Berks and similar soils: Typically 55 percent, ranging from about 50 to 60 percent
Groseclose and similar soils: Typically 40 percent, ranging from about 35 to 45 percent

Typical Profile

Berks

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 6 inches—dark brown channery silt loam

Subsoil:
6 to 32 inches—yellowish brown very channery silt loam

Substratum:
32 to 38 inches—yellowish brown extremely channery silt loam

Hard bedrock:
38 inches—shale bedrock

Groseclose

Surface layer:
0 to 2 inches—dark yellowish brown silty clay loam

Subsoil:
2 to 10 inches—dark yellowish brown silty clay loam
10 to 16 inches—yellowish red clay; iron-manganese concretions
16 to 33 inches—yellowish red silty clay loam; iron-manganese concretions

Substratum:
33 to 62 inches—yellowish brown and strong brown channery silt loam; iron-manganese concretions

Minor Components

Dissimilar components:
- Carbo and Bland soils, which have more clay and fewer rock fragments in the soil than the Berks soil and are moderately deep to bedrock; on similar landforms and generally associated with outcrops of limestone bedrock
- Soils which have more clay and fewer rock fragments in the soil than the Berks soil and are shallow to bedrock; on similar landforms and generally associated with outcrops of limestone bedrock
- Areas with outcrops of sandstone bedrock; in landform positions similar to those of the Berks and Groseclose soils

Similar components:
- Chiswell soils, which are shallow to shale bedrock; in landform positions similar to those of the Berks and Gilpin soils
- Shelocta soils, which are very deep to bedrock and have less clay than the Groseclose soil; on footslopes
- Westmoreland soils, which are deep to bedrock and have less clay than the Groseclose soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Berks—low (about 3.7 inches); Groseclose—moderate (about 7.9 inches)
Slowest saturated hydraulic conductivity: Berks—moderately high (about 0.57 in/hr); Groseclose—moderately low (about 0.06 in/hr)
Depth class: Berks—moderately deep (20 to 40 inches); Groseclose—very deep (more than 60 inches)

Depth to root-restrictive feature: Berks—20 to 40 inches to bedrock (lithic); Groseclose—more than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Berks—low; Groseclose—high
Runoff class: Berks—medium; Groseclose—high
Surface fragments: None
Parent material: Berks—channery, loamy residuum weathered from shale and siltstone; Groseclose—clayey residuum weathered from limestone and shale

Use and Management Considerations

Cropland

Suitability: Moderately suited to grass-legume hay; poorly suited to corn; not suited to alfalfa hay

- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The bedrock and high clay content restrict the rooting depth of crops.
- Because of the limited available water capacity, plants may suffer from moisture stress.

Pastureland

Suitability: Moderately suited

- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The bedrock may restrict the rooting depth of plants.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.

Woodland

Suitability: Moderately suited to northern red oak and chestnut oak

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks is reduced.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: Berks—JJ; Groseclose—M
Hydric soils: No

3D—Berks-Groseclose complex, 15 to 35 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 10 to 50 acres

Map Unit Composition

Note: These Berks and Groseclose soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Berks and similar soils: Typically 55 percent, ranging from about 50 to 60 percent
Groseclose and similar soils: Typically 40 percent, ranging from about 35 to 45 percent

Typical Profile

Berks

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 6 inches—dark brown channery silt loam

Subsoil:
6 to 32 inches—yellowish brown very channery silt loam

Substratum:
32 to 38 inches—yellowish brown extremely channery silt loam

Hard bedrock:
38 inches—shale bedrock

Groseclose

Surface layer:
0 to 2 inches—dark yellowish brown silty clay loam

Subsoil:
2 to 10 inches—dark yellowish brown silty clay loam
10 to 16 inches—yellowish red clay; iron-manganese concretions
16 to 33 inches—yellowish red silty clay loam; iron-manganese concretions

Substratum:
33 to 62 inches—yellowish brown and strong brown channery silt loam; iron-manganese concretions

Minor Components

Dissimilar components:
- Carbo soils, which have more clay and fewer rock fragments in the soil than the Berks soil and are moderately deep to bedrock; on similar landforms and generally associated with outcrops of limestone bedrock
- Soils which have more clay and fewer rock fragments in the soil than the Berks soil and are shallow to bedrock; on similar landforms and generally associated with outcrops of limestone bedrock
- Areas with outcrops of sandstone bedrock; in landform positions similar to those of the Berks and Groseclose soils

Similar components:
- Chiswell soils, which are shallow to shale bedrock; in landform positions similar to those of the Berks and Groseclose soils
- Shelocta soils, which are very deep to bedrock and have less clay than Groseclose soil; on footslopes
- Westmoreland soils, which are deep to bedrock and have less clay than Groseclose soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Berks—low (about 3.7 inches); Groseclose—moderate (about 7.9 inches)
Slowest saturated hydraulic conductivity: Berks—moderately high (about 0.57 in/hr); Groseclose—moderately low (about 0.06 in/hr)
Depth class: Berks—moderately deep (20 to 40 inches); Groseclose—very deep (more than 60 inches)
Depth to root-restrictive feature: Berks—20 to 40 inches to bedrock (lithic); Groseclose—more than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Berks—low; Groseclose—high
Runoff class: Berks—high; Groseclose—very high
Surface fragments: None
Parent material: Berks—channery, loamy residuum weathered from shale and siltstone; Groseclose—clayey residuum weathered from limestone and shale

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

Suitability: Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.
- The bedrock may restrict the rooting depth of plants.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.

Woodland

Suitability: Moderately suited to northern red oak and chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The use of mechanical planting equipment is impractical because of the slope.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- Because of the slope, designing local roads and streets is difficult.
- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: Berks—JJ; Groseclose—M
Hydric soils: No

4D—Berks-Poplimento complex, 15 to 35 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains on uplands
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 5 to 75 acres

Map Unit Composition

Note: These Berks and Poplimento soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Berks and similar soils: Typically 50 percent, ranging from about 40 to 60 percent
Poplimento and similar soils: Typically 40 percent, ranging from about 30 to 55 percent

Typical Profile

Berks

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 6 inches—dark brown channery silt loam

Subsoil:
6 to 32 inches—yellowish brown very channery silt loam

Substratum:
32 to 38 inches—yellowish brown extremely channery silt loam

Hard bedrock:
38 inches—shale bedrock

Poplimento

Surface layer:
0 to 5 inches—dark yellowish brown silty clay loam

Subsoil:
5 to 20 inches—yellowish red silty clay
20 to 35 inches—yellowish red silty clay; many yellow mottles
35 to 50 inches—yellowish red and brownish yellow silty clay loam
50 to 60 inches—yellowish red and brownish yellow channery silty clay loam

Minor Components

Dissimilar components:
- Carbo soils, which have more clay than the Berks soil and are moderately deep to limestone bedrock; in similar landform positions
- Oriskany soils, which are very deep to bedrock and have more rock fragments in the soil than Poplimento soil; on footslopes
- Areas with outcrops of sandstone bedrock; in landform positions similar to those of the Berks and Poplimento soils
- Weikert soils, which are shallow to shale bedrock; in landform positions similar to those of the Berks and Poplimento soils
- Calvin soils, which are redder in the subsoil than the Berks and Poplimento soils; in similar landform positions at the higher elevations
- Westmoreland soils, which are deep to bedrock, have less clay than the Poplimento soil, and have fewer rock fragments in the soil than the Berks soil

Similar components:
- Shelocta soils, which are very deep to bedrock; on footslopes
- Areas that are severely eroded; in landform positions similar to those of the Berks and Poplimento soils

Soil Properties and Qualities

Available water capacity: Berks—low (about 3.7 inches); Poplimento—moderate (about 8.1 inches)
Slowest saturated hydraulic conductivity: Berks—moderately high (about 0.57 in/hr); Poplimento—moderately high (about 0.20 in/hr)
Depth class: Berks—moderately deep (20 to 40 inches); Poplimento—very deep (more than 60 inches)

Depth to root-restrictive feature: Berks—20 to 40 inches to bedrock (lithic); Poplimento—more than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Berks—low; Poplimento—high
Runoff class: High
Surface fragments: None
Parent material: Berks—channery, loamy residuum weathered from shale and siltstone; Poplimento—residuum weathered from limestone and shale

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

Suitability: Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Moderately suited to northern red oak and chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The use of mechanical planting equipment is impractical because of the slope.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: Berks—JJ; Poplimento—M
Hydric soils: No

5C—Berks-Weikert channery silt loams, 8 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Summits and shoulders
Size of areas: 10 to 100 acres

Map Unit Composition

Note: These Berks and Weikert soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Berks and similar soils: Typically 45 percent, ranging from about 40 to 50 percent
Weikert and similar soils: Typically 45 percent, ranging from about 40 to 50 percent

Typical Profile

Berks

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 6 inches—dark brown channery silt loam

Subsoil:
6 to 32 inches—yellowish brown very channery silt loam

Substratum:
32 to 38 inches—yellowish brown extremely channery silt loam

Hard bedrock:
38 inches—shale bedrock

Weikert

Surface layer:
0 to 2 inches—very dark grayish brown channery silt loam

Subsoil:
2 to 8 inches—brown very channery silt loam

Substratum:
8 to 14 inches—dark yellowish brown extremely channery silt loam

Hard bedrock:
14 inches—shale bedrock

Minor Components

Dissimilar components:
- Soils that are very deep to bedrock and are moderately well drained; on treads, risers, footslopes, and fans
- Rough soils, which are very shallow to bedrock; on landforms similar to those of the Berks and Weikert soils
- Shelocta soils, which have fewer rock fragments in the soil than the Berks and Weikert soils and are very deep to bedrock; on footslopes
- Tumbling soils, which have more clay than the Berks and Weikert soils and are very deep to bedrock; on footslopes

Similar components:
- Gilpin soils, which are moderately deep to shale bedrock and have fewer rock fragments in the subsoil than the Berks and Weikert soils; in similar landform positions

Soil Properties and Qualities

Available water capacity: Berks—low (about 3.7 inches); Weikert—very low (about 0.9 inch)
Slowest saturated hydraulic conductivity: Berks—moderately high (about 0.57 in/hr); Weikert—high (about 1.98 in/hr)
Depth class: Berks—moderately deep (20 to 40 inches); Weikert—shallow (10 to 20 inches)
Depth to root-restrictive feature: Berks—20 to 40 inches to bedrock (lithic); Weikert—10 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: None
Parent material: Channery, loamy residuum weathered from shale and siltstone

Use and Management Considerations

Cropland

Suitability: Poorly suited to corn and grass-legume hay; not suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The bedrock restricts the rooting depth of crops.
- Because of the limited available water capacity, plants may suffer from moisture stress.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Moderately suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks is reduced.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.
- The low soil strength interferes with the construction of haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Berks—3e; Weikert—6s
Virginia soil management group: JJ
Hydric soils: No

5D—Berks-Weikert channery silt loams, 15 to 35 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 10 to 100 acres

Map Unit Composition

Note: These Berks and Weikert soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Berks and similar soils: Typically 45 percent, ranging from about 40 to 50 percent
Weikert and similar soils: Typically 45 percent, ranging from about 40 to 50 percent

Typical Profile

Berks

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 6 inches—dark brown channery silt loam

Subsoil:
6 to 32 inches—yellowish brown very channery silt loam

Substratum:
32 to 38 inches—yellowish brown extremely channery silt loam

Hard bedrock:
38 inches—shale bedrock

Weikert

Surface layer:
0 to 2 inches—very dark grayish brown channery silt loam

Subsoil:
2 to 8 inches—brown very channery silt loam

Substratum:
8 to 14 inches—dark yellowish brown extremely channery silt loam

Hard bedrock:
14 inches—shale bedrock

Minor Components

Dissimilar components:
- Soils that are very deep to bedrock and are moderately well drained; on treads, risers, footslopes, and fans
- Rough soils, which are very shallow to bedrock; on landforms similar to those of the Berks and Weikert soils
- Shelocta soils, which have fewer rock fragments in the soil than the Berks and Weikert soils and are very deep to bedrock; on footslopes
- Tumbling soils, which have more clay than the Berks and Weikert soils and are very deep to bedrock; on footslopes

Similar components:
- Gilpin soils, which are moderately deep to shale bedrock and have fewer rock fragments in the subsoil than the Berks and Weikert soils; in similar landform positions

Soil Properties and Qualities

Available water capacity: Berks—low (about 3.7 inches); Weikert—very low (about 0.9 inch)
Slowest saturated hydraulic conductivity: Berks—moderately high (about 0.57 in/hr); Weikert—high (about 1.98 in/hr)
Depth class: Berks—moderately deep (20 to 40 inches); Weikert—shallow (10 to 20 inches)
Depth to root-restrictive feature: Berks—20 to 40 inches to bedrock (lithic); Weikert—10 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet

Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Channery, loamy residuum weathered from shale and siltstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

Suitability: Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Moderately suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The use of mechanical planting equipment is impractical because of the slope.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: JJ
Hydric soils: No

5E—Berks-Weikert channery silt loams, 35 to 55 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Backslopes
Size of areas: 25 to 300 acres

Map Unit Composition

Note: These Berks and Weikert soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Berks and similar soils: Typically 65 percent, ranging from about 60 to 70 percent
Weikert and similar soils: Typically 25 percent, ranging from about 20 to 30 percent

Typical Profile

Berks

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 6 inches—dark brown channery silt loam

Subsoil:
6 to 32 inches—yellowish brown very channery silt loam

Substratum:
32 to 38 inches—yellowish brown extremely channery silt loam

Hard bedrock:
38 inches—shale bedrock

Weikert

Surface layer:
0 to 2 inches—very dark grayish brown channery silt loam

Subsoil:
2 to 8 inches—brown very channery silt loam

Substratum:
8 to 14 inches—dark yellowish brown extremely channery silt loam

Hard bedrock:
14 inches—shale bedrock

Minor Components

Dissimilar components:
- Soils that are very deep to bedrock and are moderately well drained; on treads, risers, footslopes, and fans

- Rough soils, which are very shallow to bedrock; in landform positions similar to those of the Berks and Weikert soils
- Shelocta soils, which have fewer rock fragments in the soil than the Berks and Weikert soils and are very deep to bedrock; on footslopes
- Tumbling soils, which have more clay than the Berks and Weikert soils and are very deep to bedrock; on footslopes
- Holly soils, which are poorly drained; adjacent to some drainageways

Similar components:
- Gilpin soils, which are moderately deep to shale bedrock and have fewer rock fragments in the subsoil than the Berks and Weikert soils; in similar landform positions

Soil Properties and Qualities

Available water capacity: Berks—low (about 3.7 inches); Weikert—very low (about 0.9 inch)
Slowest saturated hydraulic conductivity: Berks—moderately high (about 0.57 in/hr); Weikert—high (about 1.98 in/hr)
Depth class: Berks—moderately deep (20 to 40 inches); Weikert—shallow (10 to 20 inches)
Depth to root-restrictive feature: Berks—20 to 40 inches to bedrock (lithic); Weikert—10 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Channery, loamy residuum weathered from shale and siltstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Moderately suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.

- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: JJ
Hydric soils: No

5F—Berks-Weikert channery silt loams, 55 to 70 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Backslopes
Size of areas: 50 to 500 acres

Map Unit Composition

Note: These Berks and Weikert soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Berks and similar soils: Typically 60 percent, ranging from about 55 to 65 percent
Weikert and similar soils: Typically 30 percent, ranging from about 25 to 35 percent

Typical Profile

Berks

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 6 inches—dark brown channery silt loam

Subsoil:
6 to 32 inches—yellowish brown very channery silt loam

Substratum:
32 to 38 inches—yellowish brown extremely channery silt loam

Hard bedrock:
38 inches—shale bedrock

Weikert

Surface layer:
0 to 2 inches—very dark grayish brown channery silt loam

Subsoil:
2 to 8 inches—brown very channery silt loam

Substratum:
8 to 14 inches—dark yellowish brown extremely channery silt loam

Hard bedrock:
14 inches—shale bedrock

Minor Components

Dissimilar components:
- Soils that are very deep to bedrock and are moderately well drained; on treads, risers, footslopes, and fans
- Rough soils, which are very shallow to bedrock; in landform positions similar to those of the Berks and Weikert soils
- Shelocta soils, which have fewer rock fragments in the soil than the Berks and Weikert soils and are very deep to bedrock; on footslopes
- Tumbling soils, which have more clay than the Berks and Weikert soils and are very deep to bedrock; on footslopes
- Holly soils, which are poorly drained; adjacent to some drainageways

Similar components:
- Gilpin soils, which are moderately deep to shale bedrock and have fewer rock fragments in the subsoil than the Berks and Weikert soils; in similar landform positions

Soil Properties and Qualities

Available water capacity: Berks—low (about 3.7 inches); Weikert—very low (about 0.9 inch)
Slowest saturated hydraulic conductivity: Berks—moderately high (about 0.57 in/hr); Weikert—high (about 1.98 in/hr)
Depth class: Berks—moderately deep (20 to 40 inches); Weikert—shallow (10 to 20 inches)
Depth to root-restrictive feature: Berks—20 to 40 inches to bedrock (lithic); Weikert—10 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Channery, loamy residuum weathered from shale and siltstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Moderately suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: JJ
Hydric soils: No

6E—Berks-Westmoreland complex, 35 to 55 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains on uplands
Position on the landform: Backslopes; some areas are on summits and shoulders
Size of areas: 100 to 1,000 acres

Map Unit Composition

Note: These Berks and Westmoreland soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Berks and similar soils: Typically 55 percent, ranging from about 50 to 60 percent
Westmoreland and similar soils: Typically 35 percent, ranging from about 30 to 40 percent

Typical Profile

Berks

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 6 inches—dark brown channery silt loam

Subsoil:
6 to 32 inches—yellowish brown very channery silt loam

Substratum:
32 to 38 inches—yellowish brown extremely channery silt loam

Hard bedrock:
38 inches—shale bedrock

Westmoreland

Surface layer:
0 to 6 inches—dark brown silt loam

Subsoil:
6 to 23 inches—yellowish brown silty clay loam
23 to 36 inches—yellowish brown channery silty clay loam

Substratum:
36 to 54 inches—yellowish brown very channery silt loam

Hard bedrock:
54 inches—shale bedrock

Minor Components

Dissimilar components:
- Carbo soils, which have more clay than the Berks and Westmoreland soils and are moderately deep to limestone bedrock; in similar landform positions
- Oriskany soils, which are very deep to bedrock and have more rock fragments in the soil than the Westmoreland soil; on footslopes
- Holly soils, which are poorly drained; adjacent to some drainageways
- Areas with outcrops of sandstone bedrock; in landform positions similar to those of the Berks and Westmoreland soils

Similar components:
- Weikert soils, which are shallow to shale bedrock; in landform positions similar to those of the Berks and Westmoreland soils
- Calvin soils, which are redder in the subsoil than the Berks and Westmoreland soils; in similar landform positions at the higher elevations
- Shelocta soils, which are very deep to bedrock; on footslopes
- Areas that are severely eroded; in landform positions similar to those of the Berks and Westmoreland soils

- Poplimento soils, which are very deep to bedrock and have more clay than Berks and Westmoreland soils; in similar landform positions

Soil Properties and Qualities

Available water capacity: Berks—low (about 3.7 inches); Westmoreland—moderate (about 8.6 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Berks—moderately deep (20 to 40 inches); Westmoreland—deep (40 to 60 inches)
Depth to root-restrictive feature: Berks—20 to 40 inches to bedrock (lithic); Westmoreland—40 to 60 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Berks—channery, loamy residuum weathered from shale and siltstone; Westmoreland—fine-loamy residuum weathered from limestone and shale

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- The low soil strength may cause structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: Berks—JJ; Westmoreland—U
Hydric soils: No

6F—Berks-Westmoreland complex, 55 to 70 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains on uplands
Position on the landform: Backslopes; some areas are on summits and shoulders
Size of areas: 100 to 1,000 acres

Map Unit Composition

Note: These Berks and Westmoreland soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Berks and similar soils: Typically 65 percent, ranging from about 60 to 70 percent
Westmoreland and similar soils: Typically 30 percent, ranging from about 25 to 35 percent

Typical Profile

Berks

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 6 inches—dark brown channery silt loam

Subsoil:
6 to 32 inches—yellowish brown very channery silt loam

Substratum:
32 to 38 inches—yellowish brown extremely channery silt loam

Hard bedrock:
38 inches—shale bedrock

Westmoreland

Surface layer:
0 to 6 inches—dark brown silt loam

Subsoil:
6 to 23 inches—yellowish brown silty clay loam
23 to 36 inches—yellowish brown channery silty clay loam

Substratum:
36 to 54 inches—yellowish brown very channery silt loam

Hard bedrock:
54 inches—shale bedrock

Minor Components

Dissimilar components:
- Carbo soils, which have more clay than the Berks and Westmoreland soils and are moderately deep to limetone bedrock; in similar landform positions
- Oriskany soils, which are very deep to bedrock and have more rock fragments in the soil than the Westmoreland soil; on footslopes
- Holly soils, which are poorly drained; adjacent to some drainageways
- Areas with outcrops of sandstone bedrock; in landform positions similar to those of the Berks and Westmoreland soils

Similar components:
- Weikert soils, which are shallow to shale bedrock; in landform positions similar to those of the Berks and Westmoreland soils
- Calvin soils, which have a redder subsoil than the Berks and Westmoreland soils; in similar landform positions at higher elevations
- Shelocta soils, which are very deep to bedrock; on footslopes
- Poplimento soils, which are very deep to bedrock and have more clay than the Berks and Westmoreland soils; in similar landform positions

Soil Properties and Qualities

Available water capacity: Berks—low (about 3.7 inches); Westmoreland—moderate (about 8.6 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Berks—moderately deep (20 to 40 inches); Westmoreland—deep (40 to 60 inches)
Depth to root-restrictive feature: Berks—20 to 40 inches to bedrock (lithic); Westmoreland—40 to 60 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Berks—channery, loamy residuum weathered from shale and siltstone; Westmoreland—fine-loamy residuum weathered from limestone and shale

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative

impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- The low soil strength may cause structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: Berks—JJ; Westmoreland—U
Hydric soils: No

7E—Bland silty clay loam, 25 to 50 percent slopes, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Backslopes
Size of areas: 5 to 60 acres
Note: Erosion has removed some of the original surface layer; some parts of the map unit may have intricate patterns, ranging from uneroded small areas to severely eroded small areas

Map Unit Composition

Bland and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Surface layer:
0 to 4 inches—reddish gray silty clay loam

Subsoil:
4 to 18 inches—reddish brown silty clay
18 to 30 inches—weak red silty clay; few yellowish red mottles

Substratum:
30 to 36 inches—dusky red channery clay

Hard bedrock:
36 inches—dusky red argillaceous limestone bedrock

Minor Components

Dissimilar components:
- Areas of rock outcrops; in areas scattered throughout the map unit
- Areas of poorly drained soils; in narrow drainageways

Similar components:
- Soils that are deep to bedrock; on landforms similar to those of the Bland soil
- Soils that are shallow to bedrock; on landforms similar to those of the Bland soil

Soil Properties and Qualities

Available water capacity: Low (about 4.7 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.20 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Very high
Surface fragments: None
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak; poorly suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil increases the difficulty of constructing haul roads and log landings when the soil is wet.

- The stickiness of the soil reduces the efficiency of mechanical planting and restricts the use of equipment for site preparation to the drier periods.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: Y
Hydric soil: No

8D—Bland-Rock outcrop complex, 8 to 25 percent slopes, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 5 to 150 acres
Note: Erosion has removed some of the original surface layer; some part of the map unit may have intricate patterns, ranging from uneroded small areas to severely eroded small areas

Map Unit Composition

Note: This Bland soil and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Bland and similar soils: Typically 80 percent, ranging from about 75 to 85 percent
Rock outcrop: Typically 15 percent, ranging from about 10 to 20 percent

Typical Profile

Bland

Surface layer:
0 to 4 inches—reddish gray silty clay loam

Subsoil:
4 to 18 inches—reddish brown silty clay
18 to 30 inches—weak red silty clay; few yellowish red mottles

Substratum:
30 to 36 inches—dusky red channery clay

Hard bedrock:
36 inches—dusky red argillaceous limestone bedrock

Rock outcrop

This part of the map unit consists of exposures of hard reddish limestone that are a few inches to about 3 feet in height.

Minor Components

Dissimilar components:
- Berks soils, which formed in shale and have less clay and more rock fragments than the Bland soil; in landscape positions higher than those of the Bland soil
- Poplimento soils, which are very deep to bedrock and formed in shale; in landscape positions higher than those of the Bland soil
- Westmoreland soils, which are deep to bedrock, formed in shale, and have less clay than the Bland soil; in the higher landscape positions
- Areas of poorly drained soils; in narrow drainageways

Similar components:
- Soils that are deep to bedrock; on landforms similar to those of the Bland soil
- Soils that are shallow to bedrock; on landforms similar to those of the Bland soil

Properties and Qualities of the Bland Soil

Available water capacity: Low (about 4.7 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.20 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: None
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak; poorly suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.

- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting and restricts the use of equipment for site preparation to the drier periods.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Bland—7s; Rock outcrop—8s
Virginia soil management group: Bland—Y; Rock outcrop—none assigned
Hydric soils: No

8E—Bland-Rock outcrop complex, 25 to 50 percent slopes, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Backslopes
Size of areas: 5 to 200 acres
Note: Erosion has removed some of the original surface layer; some parts of the map

unit may have intricate patterns, ranging from uneroded small areas to severely eroded small areas

Map Unit Composition

Note: This Bland soil and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Bland and similar soils: Typically 80 percent, ranging from about 75 to 85 percent
Rock outcrop: Typically 15 percent, ranging from about 10 to 20 percent

Typical Profile

Bland

Surface layer:
0 to 4 inches—reddish gray silty clay loam

Subsoil:
4 to 18 inches—reddish brown silty clay
18 to 30 inches—weak red silty clay; few yellowish red mottles

Substratum:
30 to 36 inches—dusky red channery clay

Hard bedrock:
36 inches—dusky red argillaceous limestone bedrock

Rock outcrop

This part of the map unit consists of exposures of hard reddish limestone that are a few inches to about 3 feet in height.

Minor Components

Dissimilar components:
- Berks soils, which formed in shale and have less clay and more rock fragments than the Bland soil; in landscape positions higher than those of the Bland soil
- Poplimento soils, which are very deep to bedrock and formed in shale; in landscape positions higher than those of the Bland soil
- Westmoreland soils, which are deep to bedrock, formed in shale, and have less clay than the Bland soil; in landscape positions higher than those of the Bland soil
- Areas of poorly drained soils; in narrow drainageways

Similar components:
- Soils that are very deep to bedrock; on landforms similar to those of the Bland soil
- Soils that are shallow to bedrock; on landforms similar to those of the Bland soil

Properties and Qualities of the Bland Soil

Available water capacity: Low (about 4.7 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.20 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Very high
Surface fragments: None
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak; poorly suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The low soil strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to the drier periods.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Bland—7s; Rock outcrop—8s
Virginia soil management group: Bland—Y; Rock outcrop—none assigned
Hydric soils: No

9D—Bland-Rock outcrop complex, karst, 8 to 35 percent slopes, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands with karst topography
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 5 to 200 acres
Note: Many sinkholes are scattered throughout areas of this map unit; erosion has removed some of the original surface layer; some parts of the map unit may have intricate patterns, ranging from uneroded small areas to severely eroded small areas

Map Unit Composition

Note: This Bland soil and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Bland and similar soils: Typically 80 percent, ranging from about 75 to 85 percent
Rock outcrop: Typically 15 percent, ranging from about 10 to 20 percent

Typical Profile

Bland

Surface layer:
0 to 4 inches—reddish gray silty clay loam

Subsoil:
4 to 18 inches—reddish brown silty clay
18 to 30 inches—weak red silty clay; few yellowish red mottles

Substratum:
30 to 36 inches—dusky red channery clay

Hard bedrock:
36 inches—dusky red argillaceous limestone bedrock

Rock outcrop

This part of the map unit consists of exposures of hard reddish limestone that are a few inches to about 3 feet in height.

Minor Components

Dissimilar components:
- Berks soils, which formed in shale and have less clay and more rock fragments than the Bland soil; in landscape positions higher than those of the Bland soil
- Poplimento soils, which are very deep to bedrock and formed in shale; in landscape positions higher than those of the Bland soil
- Westmoreland soils, which are deep to bedrock, formed in shale, and have less clay than the Bland soil; in the higher landscape positions
- Areas of poorly drained soils; in narrow drainageways

Similar components:
- Soils that are very deep to bedrock; on landforms similar to those of the Bland soil
- Soils that are shallow to bedrock; on landforms similar to those of the Bland soil

Properties and Qualities of the Bland Soil

Available water capacity: Low (about 4.7 inches)

Slowest saturated hydraulic conductivity: Moderately high (about 0.20 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Very high
Surface fragments: None
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak; poorly suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil increases the difficulty of constructing haul roads and log landings when the soil is wet.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to the drier periods.

Building sites

- Because of the potential for sinkhole collapse, building site development in karst areas is not recommended.

Septic tank absorption fields

- Sinkholes (karst areas) increase the potential for ground-water contamination from the effluent from conventional septic systems; septic systems should not be located near sinkholes.
- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.
- Collapsing sinkholes may damage local roads and streets.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Bland—7s; Rock outcrop—8s
Virginia soil management group: Bland—Y; Rock outcrop—none assigned
Hydric soils: No

10D—Calvin loam, 15 to 35 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains on uplands
Position on the landform: Summits and shoulders
Size of areas: 25 to 100 acres

Map Unit Composition

Calvin and similar soils: Typically 85 percent, ranging from about 75 to 95 percent

Typical Profile

Organic layer:
0 to 1 inch—moderately decomposed plant material

Surface layer:
1 to 4 inches—reddish brown loam

Subsurface layer:
4 to 9 inches—reddish brown loam

Subsoil:
9 to 16 inches—reddish brown channery loam
16 to 25 inches—reddish brown very channery loam

Substratum:
25 to 30 inches—reddish brown very channery loam

Hard bedrock:
30 inches—siltstone bedrock

Minor Components

Dissimilar components:
- Areas that contain rock outcrops; in landform positions similar to those of the Calvin soil
- Oriskany soils, which have many cobbles and stones in the soil and are very deep to bedrock; on footslopes

- Ramsey soils, which are shallow to sandstone bedrock and have less silt and more sand than the Calvin soil; in similar landform positions
- Westmoreland soils, which are deep to bedrock; in landform positions similar to those of the Calvin soil
- Holly soils, which are poorly drained; adjacent to some drainageways
- Rough soils, which are very shallow to bedrock; in landform positions similar to those of the Calvin soil

Similar components:
- Soils that are deep to bedrock; in landform positions similar to those of the Calvin soil
- Berks soils, which are moderately deep to shale bedrock and have browner colors than the Calvin soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Low (about 3.8 inches)
Slowest saturated hydraulic conductivity: High (about 1.98 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Channery, loamy residuum weathered from shale and siltstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Moderately suited to northern red oak and chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The use of mechanical planting equipment is impractical because of the slope.

- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: JJ
Hydric soil: No

11F—Calvin-Rough complex, 35 to 80 percent slopes, very rocky

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains on uplands
Position on the landform: Backslopes and, in some areas, summits and shoulders
Size of areas: 100 to 2,000 acres
Note: Outcrops of siltstone or sandstone bedrock cover 2 to 10 percent of the surface

Map Unit Composition

Note: These Calvin and Rough soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Calvin and similar soils: Typically 70 percent, ranging from about 65 to 75 percent
Rough and similar soils: Typically 20 percent, ranging from about 15 to 25 percent

Typical Profile

Calvin

Organic layer:
0 to 1 inch—moderately decomposed plant material

Surface layer:
1 to 4 inches—reddish brown loam

Subsurface layer:
4 to 9 inches—reddish brown loam

Subsoil:
9 to 16 inches—reddish brown channery loam
16 to 25 inches—reddish brown very channery loam

Substratum:
25 to 30 inches—reddish brown very channery loam

Hard bedrock:
30 inches—siltstone bedrock

Rough

Organic layer:
0 to 1 inch—moderately decomposed plant material

Surface layer:
1 to 2 inches—dark brown channery loam

Subsoil:
2 to 8 inches—dark reddish brown very channery loam

Substratum:
8 to 10 inches—dark reddish brown extremely channery loam

Hard bedrock:
10 inches—shale bedrock

Minor Components

Dissimilar components:
- Areas that contain rock outcrops; in landform positions similar to those of the Calvin and Rough soils
- Oriskany soils, which have many cobbles and stones in the soil and are very deep to bedrock; on footslopes
- Ramsey soils, which are shallow to sandstone bedrock and have less silt and more sand than the Calvin and Rough soils; in similar landform positions
- Westmoreland soils, which are deep to bedrock; in landform positions similar to those of the Calvin and Rough soils
- Holly soils, which are poorly drained; adjacent to some drainageways

Similar components:
- Soils that are deep to bedrock; in landform positions similar to those of the Calvin and Rough soils
- Berks soils, which are moderately deep to shale bedrock and have browner colors than the Calvin and Rough soils; in similar landform positions

Soil Properties and Qualities

Available water capacity: Calvin—low (about 3.8 inches); Rough—very low (about 0.8 inch)
Slowest saturated hydraulic conductivity: High (about 1.98 in/hr)
Depth class: Calvin—moderately deep (20 to 40 inches); Rough—very shallow (less than 10 inches)
Depth to root-restrictive feature: Calvin—20 to 40 inches to bedrock (lithic); Rough—4 to 10 inches to bedrock (lithic)
Drainage class: Calvin—well drained; Rough—somewhat excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Calvin—high; Rough—very high

Surface fragments: About 0.10 to 3.00 percent subangular stones
Parent material: Channery, loamy residuum weathered from shale and siltstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: JJ
Hydric soils: No

12C—Carbo-Beech Grove complex, 8 to 15 percent slopes, very rocky, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Summits and shoulders
Size of areas: 10 to 50 acres
Note: Erosion has removed some of the original surface layer; some parts of the map unit may have intricate patterns, ranging from uneroded small areas to severely eroded small areas; outcrops of limestone bedrock cover 2 to 10 percent of the surface

Map Unit Composition

Note: These Carbo and Beech Grove soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Carbo and similar soils: Typically 50 percent, ranging from about 45 to 55 percent
Beech Grove and similar soils: Typically 30 percent, ranging from about 25 to 35 percent

Typical Profile

Carbo

Surface layer:
0 to 6 inches—brown silty clay loam

Subsoil:
6 to 20 inches—strong brown clay
20 to 29 inches—yellowish brown clay; common black mottles

Hard bedrock:
29 inches—limestone bedrock

Beech Grove

Surface layer:
0 to 4 inches—very dark grayish brown channery silt loam

Hard bedrock:
4 inches—limestone bedrock

Minor Components

Dissimilar components:
- Areas that contain rock outcrops; in landform positions similar to those of the Carbo and Beech Grove soils
- Frederick soils, which are very deep to bedrock; in landform positions similar to those of the Carbo and Beech Grove soils
- Groseclose soils, which are very deep to bedrock; in landform positions similar to those of the Carbo and Beech Grove soils
- Westmoreland soils, which are deep to bedrock; in landform positions similar to those of the Carbo and Beech Grove soils

Similar components:
- Soils that are shallow to limestone bedrock; in landform positions similar to those of the Carbo and Beech Grove soils

- Bland soils, which are moderately deep to bedrock and have darker red colors; in landform positions similar to those of the Carbo and Beech Grove soils

Soil Properties and Qualities

Available water capacity: Carbo—low (about 3.6 inches); Beech Grove—very low (about 0.5 inch)
Slowest saturated hydraulic conductivity: Carbo—moderately low (about 0.06 in/hr); Beech Grove—moderately high (about 0.57 in/hr)
Depth class: Carbo—moderately deep (20 to 40 inches); Beech Grove—very shallow (less than 10 inches)
Depth to root-restrictive feature: Carbo—20 to 40 inches to bedrock (lithic); Beech Grove—1 to 8 inches to bedrock (lithic)
Drainage class: Carbo—well drained; Beech Grove—excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Carbo—high; Beech Grove—low
Runoff class: High
Surface fragments: None
Parent material: Carbo—clayey residuum weathered from limestone; Beech Grove—loamy residuum weathered from limestone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.
- The bedrock may restrict the rooting depth of plants.
- Rock outcrops may limit machinery operations.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks is reduced.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil increases the difficulty of constructing haul roads and log landings when the soil is wet.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to the drier periods.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

- Shrinking and swelling of the soil may crack foundations and basement walls.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6s
Virginia soil management group: Carbo—Y; Beech Grove—JJ
Hydric soils: No

12D—Carbo-Beech Grove complex, 15 to 25 percent slopes, very rocky, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 10 to 100 acres
Note: Erosion has removed some of the original surface layer; some parts of the map unit may have intricate patterns, ranging from uneroded small areas to severely eroded small areas; outcrops of limestone bedrock cover 2 to 10 percent of the surface

Map Unit Composition

Note: These Carbo and Beech Grove soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Carbo and similar soils: Typically 60 percent, ranging from about 55 to 65 percent
Beech Grove and similar soils: Typically 30 percent, ranging from about 25 to 35 percent

Typical Profile

Carbo

Surface layer:
0 to 6 inches—brown silty clay loam

Subsoil:
6 to 20 inches—strong brown clay
20 to 29 inches—yellowish brown clay; common black mottles

Hard bedrock:
29 inches—limestone bedrock

Beech Grove

Surface layer:
0 to 4 inches—very dark grayish brown channery silt loam

Hard bedrock:
4 inches—limestone bedrock

Minor Components

Dissimilar components:
- Areas that contain rock outcrops; in landform positions similar to those of the Carbo and Beech Grove soils
- Frederick soils, which are very deep to bedrock; in landform positions similar to those of the Carbo and Beech Grove soils
- Groseclose soils, which are very deep to bedrock; in landform positions similar to those of the Carbo and Beech Grove soils
- Westmoreland soils, which are deep to bedrock; in landform positions similar to those of the Carbo and Beech Grove soils

Similar components:
- Soils which are shallow to limestone bedrock; in landform positions similar to those of the Carbo and Beech Grove soils
- Bland soils, which are moderately deep to bedrock and have darker red colors; in landform positions similar to those of the Carbo and Beech Grove soils

Soil Properties and Qualities

Available water capacity: Carbo—low (about 3.6 inches); Beech Grove—very low (about 0.5 inch)
Slowest saturated hydraulic conductivity: Carbo—moderately low (about 0.06 in/hr); Beech Grove—moderately high (about 0.57 in/hr)
Depth class: Carbo—moderately deep (20 to 40 inches); Beech Grove—very shallow (less than 10 inches)
Depth to root-restrictive feature: Carbo—20 to 40 inches to bedrock (lithic); Beech Grove—1 to 8 inches to bedrock (lithic)
Drainage class: Carbo—well drained; Beech Grove—excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Carbo—high; Beech Grove—low
Runoff class: Very high
Surface fragments: None
Parent material: Carbo—clayey residuum weathered from limestone; Beech Grove—loamy residuum weathered from limestone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.
- The bedrock may restrict the rooting depth of plants.
- Rock outcrops may limit machinery operations.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil increases the difficulty of constructing haul roads and log landings when the soil is wet.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to the drier periods.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Shrinking and swelling of the soil may crack foundations and basement walls.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6s
Virginia soil management group: Carbo—Y; Beech Grove—JJ
Hydric soils: No

12E—Carbo-Beech Grove complex, 25 to 35 percent slopes, very rocky, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Backslopes
Size of areas: 25 to 200 acres
Note: Erosion has removed some of the original surface layer; some parts of the map unit may have intricate patterns, ranging from uneroded small areas to severely eroded small areas; outcrops of limestone bedrock cover 2 to 10 percent of the surface

Map Unit Composition

Note: These Carbo and Beech Grove soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Carbo and similar soils: Typically 60 percent, ranging from about 55 to 65 percent
Beech Grove and similar soils: Typically 30 percent, ranging from about 25 to 35 percent

Typical Profile

Carbo

Surface layer:
0 to 6 inches—brown silty clay loam

Subsoil:
6 to 20 inches—strong brown clay
20 to 29 inches—yellowish brown clay; common black mottles

Hard bedrock:
29 inches—limestone bedrock

Beech Grove

Surface layer:
0 to 4 inches—very dark grayish brown channery silt loam

Hard bedrock:
4 inches—limestone bedrock

Minor Components

Dissimilar components:
- Areas that contain rock outcrops; in landform positions similar to those of the Carbo and Beech Grove soils
- Westmoreland soils, which are deep to bedrock; in landform positions similar to those of the Carbo and Beech Grove soils

Similar components:
- Soils which are shallow to limestone bedrock; in landform positions similar to those of the Carbo and Beech Grove soils
- Bland soils, which are moderately deep to bedrock and have darker red colors; in landform positions similar to those of the Carbo and Beech Grove soils

Soil Properties and Qualities

Available water capacity: Carbo—low (about 3.6 inches); Beech Grove—very low (about 0.5 inch)
Slowest saturated hydraulic conductivity: Carbo—moderately low (about 0.06 in/hr); Beech Grove—moderately high (about 0.57 in/hr)
Depth class: Carbo—moderately deep (20 to 40 inches); Beech Grove—very shallow (less than 10 inches)
Depth to root-restrictive feature: Carbo—20 to 40 inches to bedrock (lithic); Beech Grove—1 to 8 inches to bedrock (lithic)
Drainage class: Carbo—well drained; Beech Grove—excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Carbo—high; Beech Grove—low
Runoff class: Very high
Surface fragments: None
Parent material: Carbo—clayey residuum weathered from limestone; Beech Grove—loamy residuum weathered from limestone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.
- The bedrock may restrict the rooting depth of plants.
- Rock outcrops may limit machinery operations.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.

- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The use of mechanical planting equipment is impractical because of the slope.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to the drier periods.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Shrinking and swelling of the soil may crack foundations and basement walls.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: Carbo—Y; Beech Grove—JJ
Hydric soils: No

12F—Carbo-Beech Grove complex, 35 to 65 percent slopes, very rocky, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Backslopes
Size of areas: 25 to 200 acres

Note: Erosion has removed some of the original surface layer; some parts of the map unit may have intricate patterns, ranging from uneroded small areas to severely eroded small areas; outcrops of limestone bedrock cover 2 to 10 percent of the surface

Map Unit Composition

Note: These Carbo and Beech Grove soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Carbo and similar soils: Typically 60 percent, ranging from about 55 to 65 percent
Beech Grove and similar soils: Typically 30 percent, ranging from about 25 to 35 percent

Typical Profile

Carbo

Surface layer:
0 to 6 inches—brown silty clay loam

Subsoil:
6 to 20 inches—strong brown clay
20 to 29 inches—yellowish brown clay; common black mottles

Hard bedrock:
29 inches—limestone bedrock

Beech Grove

Surface layer:
0 to 4 inches—very dark grayish brown channery silt loam

Hard bedrock:
4 inches—limestone bedrock

Minor Components

Dissimilar components:
- Areas that contain rock outcrops; in landform positions similar to those of the Carbo and Beech Grove soils
- Westmoreland soils, which are deep to bedrock; in landform positions similar to those of the Carbo and Beech Grove soils

Similar components:
- Soils which are shallow to limestone bedrock; in landform positions similar to those of the Carbo and Beech Grove soils
- Bland soils, which are moderately deep to bedrock and have darker red colors; in landform positions similar to those of the Carbo and Beech Grove soils

Soil Properties and Qualities

Available water capacity: Carbo—low (about 3.6 inches); Beech Grove—very low (about 0.5 inch)
Slowest saturated hydraulic conductivity: Carbo—moderately low (about 0.06 in/hr); Beech Grove—moderately high (about 0.57 in/hr)
Depth class: Carbo—moderately deep (20 to 40 inches); Beech Grove—very shallow (less than 10 inches)
Depth to root-restrictive feature: Carbo—20 to 40 inches to bedrock (lithic); Beech Grove—1 to 8 inches to bedrock (lithic)
Drainage class: Carbo—well drained; Beech Grove—excessively drained
Depth to seasonal water saturation: More than 6 feet

Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Carbo—high; Beech Grove—low
Runoff class: Very high
Surface fragments: None
Parent material: Carbo—clayey residuum weathered from limestone; Beech Grove—loamy residuum weathered from limestone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to the drier periods.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Shrinking and swelling of the soil may crack foundations and basement walls.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.

- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: Carbo—Y; Beech Grove—JJ
Hydric soils: No

13C—Carbo-Frederick-Urban land complex, 0 to 15 percent slopes, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Areas containing native soil material, towns, highways, housing developments, industrial parks, landfills, shopping centers, or other manmade areas, excluding surface mines or gravel quarries
Size of areas: 30 to 300 acres

Map Unit Composition

Note: These Carbo and Frederick soils and Urban land occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Carbo and similar soils: Typically 35 percent, ranging from about 25 to 40 percent
Frederick and similar soils: Typically 34 percent, ranging from about 25 to 40 percent
Urban land: Typically 30 percent, ranging from about 25 to 35 percent

Typical Profile

Carbo

Surface layer:
0 to 6 inches—brown silty clay loam

Subsoil:
6 to 20 inches—strong brown clay
20 to 29 inches—yellowish brown clay; common black mottles

Hard bedrock:
29 inches—limestone bedrock

Frederick

Surface layer:
0 to 2 inches—dark yellowish brown silt loam

Subsoil:
2 to 8 inches—brown silty clay loam
8 to 16 inches—yellowish red silty clay loam
16 to 38 inches—red clay
38 to 62 inches—yellowish red clay; common brownish yellow mottles

Urban land

This part of the map unit consists of areas covered by asphalt or concrete, such as

roadways or parking lots. Also included are structures, buildings, and other impervious surfaces.

Minor Components

Dissimilar components:
- Soils of undisturbed soil materials that are shallow to limestone bedrock; on uplands
- Beech Grove soils, which are undisturbed soil materials that are very shallow to limestone bedrock; on uplands
- Soils that are poorly drained, somewhat poorly drained, or moderately well drained; in landform positions similar to those of the Carbo and Frederick soils
- Areas that contain rock outcrops; in landform positions similar to those of the Carbo and Frederick soils
- Areas that contain water, such as ponds or reservoirs

Properties and Qualities of the Carbo and Frederick Soils

Available water capacity: Carbo—low (about 3.6 inches); Frederick—moderate (about 7.2 inches)
Slowest saturated hydraulic conductivity: Carbo—moderately low (about 0.06 in/hr); Frederick—moderately high (about 0.57 in/hr)
Depth class: Carbo—moderately deep (20 to 40 inches); Frederick—very deep (more than 60 inches)
Depth to root-restrictive feature: Carbo—20 to 40 inches to bedrock (lithic); Frederick—more than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Carbo—high; Frederick—moderate
Runoff class: Carbo—high; Frederick—medium
Surface fragments: None
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pastureland.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Shrinking and swelling of the soil may crack foundations and basement walls.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Figure 2.—An area of Carbo-Rock outcrop complex, 8 to 25 percent slopes, eroded, is in the foreground. This soil is commonly used for pastureland.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 8s
Virginia soil management group: Carbo—Y; Frederick—M; Urban land—none assigned
Hydric soils: No

14D—Carbo-Rock outcrop complex, 8 to 25 percent slopes, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands (fig. 2)
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 10 to 200 acres
Note: Erosion has removed some of the original surface layer; some parts of the map

unit may have intricate patterns, ranging from uneroded small areas to severely eroded small areas

Map Unit Composition

Note: This Carbo soil and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Carbo and similar soils: Typically 60 percent, ranging from about 55 to 65 percent
Rock outcrop: Typically 15 percent, ranging from about 10 to 20 percent

Typical Profile

Carbo

Surface layer:
0 to 6 inches—brown silty clay loam

Subsoil:
6 to 20 inches—strong brown clay
20 to 29 inches—yellowish brown clay; common black mottles

Hard bedrock:
29 inches—limestone bedrock

Rock outcrop

This part of the map unit consists of outcrops of grayish hard limestone bedrock. Outcrops are a few inches to about 5 feet in height.

Minor Components

Dissimilar components:
- Beech Grove soils, which are very shallow to bedrock; in landform positions similar to those of the Carbo soil
- Frederick soils, which are very deep to bedrock; in landform positions similar to those of the Carbo soil
- Groseclose soils which, are very deep to bedrock; in landform positions similar to those of the Carbo soil

Similar components:
- Soils that are shallow to limestone bedrock; in landform positions similar to those of the Carbo soil
- Bland soils, which are moderately deep to bedrock and have darker red colors; in landform positions similar to those of the Carbo soil

Properties and Qualities of the Carbo Soil

Available water capacity: Low (about 3.6 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: High
Runoff class: Very high
Surface fragments: None
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to the drier periods.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Shrinking and swelling of the soil may crack foundations and basement walls.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland

Land capability class: Carbo—7s; Rock outcrop—8s
Virginia soil management group: Carbo—Y; Rock outcrop—none assigned
Hydric soils: No

14E—Carbo-Rock outcrop complex, 25 to 65 percent slopes, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Backslopes
Size of areas: 20 to 500 acres
Note: Erosion has removed some of the original surface layer; some parts of the map unit may have intricate patterns, ranging from uneroded small areas to severely eroded small areas

Map Unit Composition

Note: This Carbo soil and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Carbo and similar soils: Typically 80 percent, ranging from about 75 to 85 percent
Rock outcrop: Typically 15 percent, ranging from about 10 to 20 percent

Typical Profile

Carbo

Surface layer:
0 to 6 inches—brown silty clay loam

Subsoil:
6 to 20 inches—strong brown clay
20 to 29 inches—yellowish brown clay; common black mottles

Hard bedrock:
29 inches—limestone bedrock

Rock outcrop

This part of the map unit consists of outcrops of grayish hard limestone bedrock. Outcrops are a few inches to about 5 feet in height.

Minor Components

Dissimilar components:
- Beech Grove soils, which are very shallow to bedrock; in landform positions similar to those of the Carbo soil
- Frederick soils, which are very deep to bedrock; in landform positions similar to those of the Carbo soil
- Groseclose soils, which are very deep to bedrock; in landform positions similar to those of the Carbo soil

Similar components:
- Soils that are shallow to limestone bedrock; in landform positions similar to those of the Carbo soil
- Bland soils, which are moderately deep to bedrock and have darker red colors; in landform positions similar to those of the Carbo soil

Properties and Qualities of the Carbo Soil

Available water capacity: Low (about 3.6 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: High
Runoff class: Very high
Surface fragments: None
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to the drier periods.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Shrinking and swelling of the soil may crack foundations and basement walls.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Carbo—7s; Rock outcrop—8s
Virginia soil management group: Carbo—Y; Rock outcrop—none assigned
Hydric soils: No

15D—Carbo-Rock outcrop complex, karst, 8 to 35 percent slopes, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands with karst topography
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 10 to 100 acres
Note: Many sinkholes are scattered throughout these areas of this map unit (fig. 3); erosion has removed some of the original surface layer; some parts of the map unit may have intricate patterns, ranging from uneroded small areas to severely eroded small areas

Map Unit Composition

Note: This Carbo soil and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Carbo and similar soils: Typically 60 percent, ranging from about 55 to 65 percent
Rock outcrop: Typically 30 percent, ranging from about 15 to 35 percent

Typical Profile

Carbo

Surface layer:
0 to 6 inches—brown silty clay loam

Subsoil:
6 to 20 inches—strong brown clay
20 to 29 inches—yellowish brown clay; common black mottles

Hard bedrock:
29 inches—limestone bedrock

Rock outcrop

This part of the map unit consists of outcrops of grayish hard limestone bedrock. Outcrops are a few inches to about 5 feet in height.

Figure 3.—A typical area of Carbo-Rock outcrop complex, karst, 8 to 35 percent slopes, eroded. Sinkholes and areas of rock outcrops limit the extent of agricultural and urban land uses in areas of this soil.

Minor Components

Dissimilar components:
- Beech Grove soils, which are shallow to bedrock; in landform positions similar to those of the Carbo soil
- Frederick soils, which are very deep to bedrock; in landform positions similar to those of the Carbo soil
- Groseclose soils, which are very deep to bedrock; in landform positions similar to those of the Carbo soil

Similar components:
- Soils that are shallow to limestone bedrock; in landform positions similar to those of the Carbo soil
- Bland soils, which are darker red; in landform positions similar to those of the Carbo soil

Properties and Qualities of the Carbo Soil

Available water capacity: Low (about 3.6 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None

Ponding hazard: None
Shrink-swell potential: High
Runoff class: Very high
Surface fragments: None
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil increases the difficulty of constructing haul roads and log landings when the soil is wet.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to the drier periods.

Building sites

- Because of the potential for sinkhole collapse, building site development in karst areas is not recommended.

Septic tank absorption fields

- Sinkholes (karst areas) increase the potential for ground-water contamination from the effluent from conventional septic systems; septic systems should not be located near sinkholes.
- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

- Collapsing sinkholes may damage local roads and streets.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Carbo—7s; Rock outcrop—8s
Virginia soil management group: Carbo—Y; Rock outcrop—none assigned
Hydric soils: No

16C—Cedarcreek-Sewell-Rock outcrop complex, 0 to 15 percent slopes, very stony

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Ridges and spurs of mountains that have been surface mined for coal
Position on the landform: Cedarcreek and Sewell—summits, shoulders, surface-mine benches, and surface-mine outslopes and some areas on footslopes and backslopes; Rock outcrop—exposed highwalls (These areas have a single surface-mine bench, outslope, and highwall, all of which are on contour. The bench is located between a surface-mine outslope and a surface-mine highwall.)
Size of areas: 10 to 300 acres
Note: Areas of this map unit have been surface mined for coal

Map Unit Composition

Note: These Cedarcreek and Sewell soils and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Cedarcreek and similar soils: Typically 35 percent, ranging from about 30 to 40 percent
Sewell and similar soils: Typically 30 percent, ranging from about 25 to 35 percent
Rock outcrop: Typically 10 percent, ranging from about 5 to 15 percent

Typical Profile

Cedarcreek

Surface layer:
0 to 3 inches—very dark gray very channery loam

Substratum:
3 to 15 inches—olive brown very channery loam; common gray, common yellow, and common brown mottles
15 to 65 inches—dark olive gray extremely channery loam; common brown, common yellow, and common gray mottles

Sewell

Surface layer:
0 to 4 inches—yellowish brown channery sandy loam

Substratum:
4 to 9 inches—dark yellowish brown very channery sandy loam; common gray, common yellow, and common red mottles
9 to 65 inches—yellowish brown extremely channery sandy loam; common gray, common yellow, and common red mottles

Rock outcrop

This part of the map unit occurs as near-vertical highwalls. It consists of exposed interbedded layers of sandstone, shale, siltstone, and thin seams of unmined coal.

Minor Components

Similar components:
- Fiveblock soils, which formed in mine spoil derived mainly from sandstone, have a less acidic reaction than the Sewell and Cedarcreek soils, and have more sand and less silt and clay than the Cedarcreek soil; on similar landforms
- Kaymine soils, which formed in mine spoil derived from sandstone, siltstone, shale, and coal, have a less acidic reaction than the Cedarcreek soil, and have more clay and silt and less sand than the Sewell soil; on similar landforms

Dissimilar components:
- Soils that formed in mine spoil and are somewhat poorly drained; in depressions on benches and near the base of highwalls

Properties and Qualities of the Cedarcreek and Sewell Soils

Available water capacity: Cedarcreek—low (about 3.5 inches); Sewell—very low (about 2.7 inches)
Slowest saturated hydraulic conductivity: Cedarcreek—moderately high (about 0.57 in/hr); Sewell—high (about 1.98 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Cedarcreek—well drained; Sewell—somewhat excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Cedarcreek—medium; Sewell—low
Surface fragments: Cedarcreek—about 0.10 to less than 3.00 percent subangular stones; Sewell—about 0.10 to 2.50 percent subangular stones and about 0.00 to 0.50 percent subangular boulders
Parent material: Cedarcreek—mine spoil or earthy fill derived from shale, siltstone, sandstone, and coal; Sewell—mine spoil or earthy fill derived from sandstone and small amounts of siltstone, shale, and coal

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

Suitability: Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Large stones on the surface may restrict the operation of some farm machinery.
- Rock outcrops may limit machinery operations.

Woodland

Suitability: Well suited to northern red oak, yellow-poplar, and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.

- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks is reduced.
- The slope may restrict the use of some mechanical planting equipment.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Cedarcreek and Sewell—6s; Rock outcrop—8s
Virginia soil management group: Cedarcreek and Sewell—JJ; Rock outcrop—none assigned
Hydric soils: No

17A—Chagrin loam, 0 to 3 percent slopes, occasionally flooded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Flood plains along small creeks (fig. 4)
Position on the landform: Flood-plain steps
Size of areas: 5 to 30 acres

Map Unit Composition

Chagrin and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 6 inches—brown loam

Subsoil:
6 to 18 inches—dark yellowish brown loam
18 to 42 inches—strong brown sandy clay loam

Figure 4.—Cattle grazing in a pasture of orchardgrass and white clover in an area of Chagrin loam, 0 to 3 percent slopes, occasionally flooded. An area of Carbo-Rock outcrop complex, 8 to 25 percent slopes, eroded, is in the middleground. Areas of this complex are commonly used for pasture. An area of Berks-Westmoreland complex, 35 to 55 percent slopes, is in the background. Areas of this complex are mostly used as woodland.

Substratum:
42 to 62 inches—brown sandy loam

Minor Components

Dissimilar components:
- Lobdell soils, which are moderately well drained; in landform positions similar to the Chagrin soil
- Holly soils, which are poorly drained; in depressions and backswamps
- Ogles soils, which have more rock fragments in the soil and on the surface than the Chagrin soil; in similar landform positions
- Orrville soils, which are somewhat poorly drained; in landform positions similar to those of the Chagrin soil

Similar components:
- Soils that have less clay and more sand than the Chagrin soil; in similar landform positions
- Soils that have a surface layer that is darker and thicker than that of the Chagrin soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: High (about 9.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches

Drainage class: Well drained
Depth to seasonal water saturation: About 48 to 72 inches
Water table (kind): Apparent
Flooding hazard: Occasional
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Low
Surface fragments: None
Parent material: Fine-loamy alluvium derived from limestone, sandstone, and shale

Use and Management Considerations

Cropland

Suitability: Well suited to corn, grass-legume hay, and alfalfa hay
- Flooding may damage crops.

Pastureland

Suitability: Well suited
- Flooding may damage pastures.

Woodland

Suitability: Well suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should focus on streamside management zones and stream crossings and should include general adherence to all applicable best management practices.
- Flooding may damage haul roads.
- The safe use of roads by log trucks is restricted by flooding.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- Flooding is a limitation affecting building site development.

Septic tank absorption fields

- Flooding is a limitation affecting septic tank absorption fields.

Local roads and streets

- Flooding may damage local roads and streets.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 1
Virginia soil management group: A
Hydric soil: No

18—Dumps, mine-Urban land complex

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Highly variable
Size of areas: 25 to 125 acres
Note: This map unit includes stockpiles of coal and fly ash, structures and equipment

Figure 5.—Coal is a mineral resource in Russell County. It is processed and stored in areas of Dumps, mine-Urban land complex.

used for processing coal and loading coal onto trucks or railcars, and settling ponds (fig. 5)

Map Unit Composition

Dumps, mine: Typically 85 percent, ranging from about 80 to 90 percent
Urban land: Typically 15 percent, ranging from about 10 to 20 percent

Typical Profile

Dumps, mine

This part of the map unit includes coal and fly ash storage areas, fly ash ponds, tailing ponds, and tipples. Because of the variability of the material, a typical profile is not given.

Coal and fly ash storage areas are stockpiles of coal or fly ash that are stored temporarily prior to loading onto railroad cars or coal trucks.

Fly ash ponds consist of water impoundments associated with coal-burning power plants. These impoundments are used to temporarily store fly ash slurry and to allow solids to settle from the slurry. The solid material typically consists of fine solid particles of ash, dust, and soot, which are the by-products of the burning of coal. Locations for these impoundments are highly variable. These impoundments range in size from 30 to 50 acres. The water in these impoundments is not used for human consumption.

Tailng ponds typically are associated with quarries and mines. The tailings consist of sand-sized black materials, which generally are finely pulverized coal, sandstone, shale, and siltstone. The material is washed from coal and allowed to settle into basins. It is a by-product of washed earthen material and is part of the cleaning process used in the mining, separation, and extraction process. Most of the material passes through a 100-mesh screen. The impoundments typically range in size from 1 to 15 acres. The water is not used for human consumption.

Figure 6.—A typical area of Frederick silt loam, 8 to 15 percent slopes, eroded. This soil is well suited to moderately suited to grasses and legumes for both hay and pastureland.

Tipples are coal-loading areas. They include large stockpiles of coal; processing, loading, and storage facilities; and buildings and unpaved parking areas. The stockpiles of coal are usually temporary; they are constantly being depleted and replenished by haul trucks, coal cars, and conveyor belts for processing and delivery to markets. These areas generally support no vegetation or have a sparse coverage of grasses, forbs, and dwarf trees.

Urban land

This part of the map unit consists of paved parking lots.

Use and Management Considerations

Onsite investigation is needed to determine the suitability of any area for specific uses.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: None assigned
Virginia soil management group: None assigned
Hydric soils: No

19C—Frederick silt loam, 8 to 15 percent slopes, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands (fig. 6)
Position on the landform: Summits and shoulders
Size of areas: 5 to 80 acres

Note: Erosion has removed some of the original surface layer; some parts of the map unit may have intricate patterns, ranging from uneroded small areas to severely eroded small areas

Map Unit Composition

Frederick and similar soils: Typically 95 percent, ranging from about 90 to 98 percent

Typical Profile

Surface layer:
0 to 2 inches—dark yellowish brown silt loam

Subsoil:
2 to 8 inches—brown silty clay loam
8 to 16 inches—yellowish red silty clay loam
16 to 38 inches—red clay
38 to 62 inches—yellowish red clay; common brownish yellow mottles

Minor Components

Dissimilar components:
- Bland and Carbo soils, which are moderately deep to bedrock; in landform positions similar to those of the Frederick soil
- Marbie soils, which are moderately well drained; on footslopes

Similar components:
- Wyrick soils, which have less clay in the subsoil than the Frederick soil; on footslopes
- Watahala soils, which have more chert gravel in the upper part of the subsoil and on the soil surface than the Frederick soil and a clayey subsoil at a greater depth; in similar landform positions
- Soils that have less clay in the subsoil than the Frederick soil; in similar landform positions
- Soils that have more chert gravel in the surface layers than the Frederick soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Moderate (about 7.2 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

Suitability: Well suited to grass-legume hay; moderately suited to corn and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks is reduced.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: M
Hydric soil: No

19D—Frederick silt loam, 15 to 25 percent slopes, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 5 to 200 acres
Note: Erosion has removed some of the original surface layer; some parts of the map unit may have intricate patterns, ranging from uneroded small areas to severely eroded small areas

Map Unit Composition

Frederick and similar soils: Typically 95 percent, ranging from about 90 to 98 percent

Typical Profile

Surface layer:
0 to 2 inches—dark yellowish brown silt loam

Subsoil:
2 to 8 inches—brown silty clay loam
8 to 16 inches—yellowish red silty clay loam
16 to 38 inches—red clay
38 to 62 inches—yellowish red clay; common brownish yellow mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to bedrock; in landform positions similar to those of the Frederick soil
- Marbie soils, which are moderately well drained; on footslopes

Similar components:
- Wyrick soils, which have less clay in the subsoil than the Frederick soil; on footslopes
- Watahala soils, which have more chert gravel in the upper part of the subsoil and on the soil surface than the Frederick soil and have a clayey subsoil at a greater depth; in similar landform positions
- Soils which have less clay in the subsoil than the Frederick soil; in similar landform positions
- Soils that have more chert gravel in the surface layers than the Frederick soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Moderate (about 7.2 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: None
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: M
Hydric soil: No

19E—Frederick silt loam, 25 to 35 percent slopes, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Backslopes
Size of areas: 5 to 200 acres
Note: Erosion has removed some of the original surface layer; some areas may have intricate patterns, ranging from uneroded small areas to severely eroded small areas

Map Unit Composition

Frederick and similar soils: Typically 95 percent, ranging from about 90 to 98 percent

Typical Profile

Surface layer:
0 to 2 inches—dark yellowish brown silt loam

Subsoil:
2 to 8 inches—brown silty clay loam
8 to 16 inches—yellowish red silty clay loam
16 to 38 inches—red clay
38 to 62 inches—yellowish red clay; common brownish yellow mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to bedrock; in landform positions similar to those of the Frederick soil
- Marbie soils, which are moderately well drained; on footslopes

Similar components:
- Wyrick soils, which have less clay in the subsoil than the Frederick soil; on footslopes
- Watahala soils, which have more chert gravel in the upper part of the subsoil and on the soil surface than the Frederick soil and have a clayey subsoil at a greater deeper; in similar landform positions
- Soils which have less clay in the subsoil than the Frederick soil; in similar landform positions
- Soils that have more chert gravel in the surface layers than the Frederick soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Moderate (about 7.2 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: None
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The use of mechanical planting equipment is impractical because of the slope.
- The low soil strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: M
Hydric soil: No

19F—Frederick silt loam, 35 to 60 percent slopes, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Backslopes
Size of areas: 5 to 200 acres
Note: Erosion has removed some of the original surface layer; some areas may have intricate patterns, ranging from uneroded small areas to severely eroded small areas

Map Unit Composition

Frederick and similar soils: Typically 95 percent, ranging from about 90 to 98 percent

Typical Profile

Surface layer:
0 to 2 inches—dark yellowish brown silt loam

Subsoil:
2 to 8 inches—brown silty clay loam
8 to 16 inches—yellowish red silty clay loam
16 to 38 inches—red clay
38 to 62 inches—yellowish red clay; common brownish yellow mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to bedrock; in landform positions similar to those of the Frederick soil
- Marbie soils, which are moderately well drained; on footslopes

Similar components:
- Wyrick soils, which have less clay in the subsoil than the Frederick soil; on footslopes
- Watahala soils, which have more chert gravel in the upper part of the subsoil and on the soil surface than Frederick soil and have a clayey subsoil at a greater depth; in similar landform positions
- Soils which have less clay in the subsoil than the Frederick soil; in similar landform positions
- Soils that have more chert gravel in the surface layers than the Frederick soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Moderate (about 7.2 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: None
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.

- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The low soil strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: M
Hydric soil: No

20C—Frederick silt loam, karst, 8 to 15 percent slopes, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands with karst topography
Position on the landform: Summits and shoulders
Size of areas: 5 to 80 acres
Note: Many sinkholes are scattered throughout areas of this map unit; erosion has removed some of the original surface layer; some parts of the map unit may have intricate patterns, ranging from uneroded small areas to severely eroded small areas

Map Unit Composition

Frederick and similar soils: Typically 95 percent, ranging from about 90 to 98 percent

Typical Profile

Surface layer:
0 to 2 inches—dark yellowish brown silt loam

Subsoil:
2 to 8 inches—brown silty clay loam
8 to 16 inches—yellowish red silty clay loam

16 to 38 inches—red clay
38 to 62 inches—yellowish red clay; common brownish yellow mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to bedrock; in landform positions similar to those of the Frederick soil
- Marbie soils, which are moderately well drained; on footslopes

Similar components:
- Wyrick soils, which have less clay in the subsoil than the Frederick soil; on footslopes
- Watahala soils, which have more chert gravel in the upper part of the subsoil and on the soil surface than the Frederick soil and have a clayey subsoil at a greater depth; in similar landform positions
- Soils which have less clay in the subsoil than the Frederick soil; in similar landform positions
- Soils that have more chert gravel in the surface layers than the Frederick soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Moderate (about 7.2 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

Suitability: Well suited to grass-legume hay; moderately suited to alfalfa hay; not suited to corn
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.
- Karst (sinkhole) areas increase the potential for ground-water contamination.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Karst (sinkhole) areas increase the potential for ground-water contamination.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks is reduced.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- Because of the potential for sinkhole collapse, building site development in karst areas is not recommended.

Septic tank absorption fields

- Sinkholes (karst areas) increase the potential for ground-water contamination from the effluent from conventional septic systems; septic systems should not be located near sinkholes.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.
- Collapsing sinkholes may damage local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: M
Hydric soil: No

20D—Frederick silt loam, karst, 15 to 25 percent slopes, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands with karst topography
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 5 to 200 acres
Note: Many sinkholes are scattered throughout areas of this map unit; erosion has removed some of the original surface layer; some parts of the map unit may have intricate patterns, ranging from uneroded small areas to severely eroded small areas

Map Unit Composition

Frederick and similar soils: Typically 95 percent, ranging from about 90 to 98 percent

Typical Profile

Surface layer:
0 to 2 inches—dark yellowish brown silt loam

Subsoil:
2 to 8 inches—brown silty clay loam
8 to 16 inches—yellowish red silty clay loam
16 to 38 inches—red clay
38 to 62 inches—yellowish red clay; common brownish yellow mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to bedrock; in landform positions similar to those of the Frederick soil
- Marbie soils, which are moderately well drained; on footslopes

Similar components:
- Wyrick soils, which have less clay in the subsoil than the Frederick soil; on footslopes
- Watahala soils, which have more chert gravel in the upper part of the subsoil and on the soil surface than the Frederick soil and have a clayey subsoil at a greater depth; in similar landform positions
- Soils which have less clay in the subsoil than the Frederick soil; in similar landform positions
- Soils that have more chert gravel in the surface layers than the Frederick soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Moderate (about 7.2 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: None
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

Suitability: Moderately suited to grass-legume hay and alfalfa hay; not suited to corn
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.
- Karst (sinkhole) areas increase the potential for ground-water contamination.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Karst (sinkhole) areas increase the potential for ground-water contamination.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- Because of the potential for sinkhole collapse, building site development in karst areas is not recommended.

Septic tank absorption fields

- Sinkholes (karst areas) increase the potential for ground-water contamination from the effluent from conventional septic systems; septic systems should not be located near sinkholes.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.
- Collapsing sinkholes may damage local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: M
Hydric soil: No

21C—Frederick gravelly silt loam, 8 to 15 percent slopes, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Summits and shoulders
Size of areas: 5 to 80 acres
Note: Erosion has removed some of the original surface layer; some parts of the map unit may have intricate patterns, ranging from uneroded small areas to severely eroded small areas

Map Unit Composition

Frederick and similar soils: Typically 95 percent, ranging from about 90 to 98 percent

Typical Profile

Surface layer:
0 to 2 inches—brown gravelly silt loam

Subsoil:
2 to 6 inches—brown gravelly silty clay loam
6 to 13 inches—yellowish red silty clay
13 to 30 inches—yellowish red clay
30 to 46 inches—yellowish red clay; common very pale brown and many reddish yellow mottles
46 to 62 inches—yellowish red clay; common very pale brown and many brownish yellow mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to bedrock; in landform positions similar to those of the Frederick soil
- Marbie soils, which are moderately well drained; on footslopes

Similar components:
- Wyrick soils, which have less clay in the subsoil than the Frederick soil; on footslopes
- Watahala soils, which have more chert gravel in the upper part of the subsoil than the Frederick soil and have a clayey subsoil at a greater depth; in similar landform positions
- Soils which have less clay in the subsoil than the Frederick soil; in similar landform positions
- Soils that have fewer chert gravel in the surface layers than the Frederick soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Moderate (about 6.8 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: About 0.50 to 2.00 percent coarse angular gravel
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks is reduced.
- The slope may restrict the use of some mechanical planting equipment.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: M
Hydric soil: No

21D—Frederick gravelly silt loam, 15 to 25 percent slopes, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 5 to 200 acres
Note: Erosion has removed some of the original surface layer; some areas may have intricate patterns, ranging from uneroded small areas to severely eroded small areas

Map Unit Composition

Frederick and similar soils: Typically 95 percent, ranging from about 90 to 98 percent

Typical Profile

Surface layer:
0 to 2 inches—brown gravelly silt loam

Subsoil:
2 to 6 inches—brown gravelly silty clay loam
6 to 13 inches—yellowish red silty clay
13 to 30 inches—yellowish red clay
30 to 46 inches—yellowish red clay; common very pale brown and many reddish yellow mottles
46 to 62 inches—yellowish red clay; common very pale brown and many brownish yellow mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to bedrock; in landform positions similar to those of the Frederick soil
- Marbie soils, which are moderately well drained; on footslopes

Similar components:
- Wyrick soils, which have less clay in the subsoil than the Frederick soil; on footslopes
- Watahala soils, which have more chert gravel in the upper part of the subsoil than the Frederick soil and have a clayey subsoil at a greater depth; in similar landform positions
- Soils which have less clay in the subsoil than the Frederick soil; in similar landform positions
- Soils that have fewer chert gravel in the surface layers than the Frederick soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Moderate (about 6.8 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: About 0.50 to 2.00 percent coarse angular gravel
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low soil strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: M
Hydric soil: No

21E—Frederick gravelly silt loam, 25 to 35 percent slopes, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Backslopes
Size of areas: 5 to 200 acres
Note: Erosion has removed some of the original surface layer; some parts of the map

unit may have intricate patterns, ranging from uneroded small areas to severely eroded small areas

Map Unit Composition

Frederick and similar soils: Typically 95 percent, ranging from about 90 to 98 percent

Typical Profile

Surface layer:
0 to 2 inches—brown gravelly silt loam

Subsoil:
2 to 6 inches—brown gravelly silty clay loam
6 to 13 inches—yellowish red silty clay
13 to 30 inches—yellowish red clay
30 to 46 inches—yellowish red clay; common very pale brown and many reddish yellow mottles
46 to 62 inches—yellowish red clay; common very pale brown and many brownish yellow mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to bedrock; in landform positions similar to those of the Frederick soil
- Marbie soils, which are moderately well drained; on footslopes

Similar components:
- Wyrick soils, which have less clay in the subsoil than the Frederick soil; on footslopes
- Watahala soils, which have more chert gravel in the upper part of the subsoil than the Frederick soil and have a clayey subsoil at a greater depth; in similar landform positions
- Soils which have less clay in the subsoil than the Frederick soil; in similar landform positions
- Soils that have fewer chert gravel in the surface layers than the Frederick soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Moderate (about 6.8 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: About 0.50 to 2.00 percent coarse angular gravel
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The use of mechanical planting equipment is impractical because of the slope.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low soil strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: M
Hydric soil: No

21F—Frederick gravelly silt loam, 35 to 60 percent slopes, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Backslopes

Size of areas: 5 to 200 acres
Note: Erosion has removed some of the original surface layer; some parts of the map unit may have intricate patterns, ranging from uneroded small areas to severely eroded small areas

Map Unit Composition

Frederick and similar soils: Typically 95 percent, ranging from about 90 to 98 percent

Typical Profile

Surface layer:
0 to 2 inches—brown gravelly silt loam

Subsoil:
2 to 6 inches—brown gravelly silty clay loam
6 to 13 inches—yellowish red silty clay
13 to 30 inches—yellowish red clay
30 to 46 inches—yellowish red clay; common very pale brown and many reddish yellow mottles
46 to 62 inches—yellowish red clay; common very pale brown and many brownish yellow mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to bedrock; in landform positions similar to those of the Frederick soil
- Marbie soils, which are moderately well drained; on footslopes

Similar components:
- Wyrick soils, which have less clay in the subsoil than the Frederick soil; on footslopes
- Watahala soils, which have more chert gravel in the upper part of the subsoil than the Frederick soil and have a clayey subsoil at a greater depth; in similar landform positions
- Soils which have less clay in the subsoil than the Frederick soil; in similar landform positions
- Soils that have fewer chert gravel in the surface layers than the Frederick soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Moderate (about 6.8 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: About 0.50 to 2.00 percent coarse angular gravel
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low soil strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: M
Hydric soil: No

22C—Frederick gravelly silt loam, karst, 8 to 15 percent slopes, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands with karst topography
Position on the landform: Summits and shoulders
Size of areas: 5 to 200 acres
Note: Many sinkholes are scattered throughout areas of this map unit; erosion has removed some of the original surface layer; some parts of the map unit may have intricate patterns, ranging from uneroded small areas to severely eroded small areas

Map Unit Composition

Frederick and similar soils: Typically 95 percent, ranging from about 90 to 98 percent

Typical Profile

Surface layer:
0 to 2 inches—brown gravelly silt loam

Subsoil:
2 to 6 inches—brown gravelly silty clay loam
6 to 13 inches—yellowish red silty clay
13 to 30 inches—yellowish red clay
30 to 46 inches—yellowish red clay; common very pale brown and many reddish yellow mottles
46 to 62 inches—yellowish red clay; common very pale brown and many brownish yellow mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to bedrock; in landform positions similar to those of the Frederick soil
- Marbie soils, which are moderately well drained; on footslopes

Similar components:
- Wyrick soils, which have less clay in the subsoil than the Frederick soil; on footslopes
- Watahala soils, which have more chert gravel in the upper part of the subsoil than the Frederick soil and have a clayey subsoil at a greater depth; in similar landform positions
- Soils which have less clay in the subsoil than the Frederick soil; in similar landform positions
- Soils that have fewer chert gravel in the surface layers than the Frederick soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Moderate (about 6.8 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: About 0.50 to 2.00 percent coarse angular gravel
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

Suitability: Moderately suited to grass-legume hay and alfalfa hay; not suited to corn
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.
- Karst (sinkhole) areas increase the potential for ground-water contamination.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Karst (sinkhole) areas increase the potential for ground-water contamination.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks is reduced.
- The slope may restrict the use of some mechanical planting equipment.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- Because of the potential for sinkhole collapse, building site development in karst areas is not recommended.

Septic tank absorption fields

- Sinkholes (karst areas) increase the potential for ground-water contamination from the effluent from conventional septic systems; septic systems should not be located near sinkholes.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.
- Collapsing sinkholes may damage local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: M
Hydric soil: No

22D—Frederick gravelly silt loam, karst, 15 to 25 percent slopes, eroded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands with karst topography
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 5 to 300 acres

Note: Many sinkholes are scattered throughout areas of this map unit; erosion has removed some of the original surface layer; some parts of the map unit may have intricate patterns, ranging from uneroded small areas to severely eroded small areas

Map Unit Composition

Frederick and similar soils: Typically 95 percent, ranging from about 90 to 98 percent

Typical Profile

Surface layer:
0 to 2 inches—brown gravelly silt loam

Subsoil:
2 to 6 inches—brown gravelly silty clay loam
6 to 13 inches—yellowish red silty clay
13 to 30 inches—yellowish red clay
30 to 46 inches—yellowish red clay; common very pale brown and many reddish yellow mottles
46 to 62 inches—yellowish red clay; common very pale brown and many brownish yellow mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to bedrock; in landform positions similar to those of the Frederick soil
- Marbie soils, which are moderately well drained; on footslopes

Similar components:
- Wyrick soils, which have less clay in the subsoil than the Frederick soil; on footslopes
- Watahala soils, which have more chert gravel in the upper part of the subsoil than the Frederick soil and have a clayey subsoil at a greater depth; in similar landform positions
- Soils which have less clay in the subsoil than the Frederick soil; in similar landform positions
- Soils that have fewer chert gravel in the surface layers than the Frederick soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Moderate (about 6.8 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: About 0.50 to 2.00 percent coarse angular gravel
Parent material: Clayey residuum weathered from limestone

Use and Management Considerations

Cropland

Suitability: Moderately suited to grass-legume hay and alfalfa hay; not suited to corn

- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.
- Karst (sinkhole) areas increase the potential for ground-water contamination.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Karst (sinkhole) areas increase the potential for ground-water contamination.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low soil strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- Because of the potential for sinkhole collapse, building site development in karst areas is not recommended.

Septic tank absorption fields

- Sinkholes (karst areas) increase the potential for ground-water contamination from the effluent from conventional septic systems; septic systems should not be located near sinkholes.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.
- Collapsing sinkholes may damage local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: M
Hydric soil: No

23D—Gilpin silt loam, 15 to 35 percent slopes

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Hills and mountains on uplands
Position on the landform: Summits and shoulders
Size of areas: 5 to 60 acres

Map Unit Composition

Gilpin and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Organic layer:
0 to 1 inch—moderately decomposed plant material

Surface layer:
1 to 3 inches—brown silt loam

Subsoil:
3 to 7 inches—dark yellowish brown silt loam
7 to 24 inches—yellowish brown silty clay loam
24 to 31 inches—yellowish brown channery silt loam

Soft bedrock:
31 inches—shale bedrock

Minor Components

Dissimilar components:
- Shelocta soils, which are very deep to bedrock; on footslopes and in landform positions similar to those of the Gilpin soil
- Wallen soils, which have more rock fragments and more sand than the Gilpin soil; in similar landform positions
- Weikert soils, which have more rock fragments in the soil than the Gilpin soil and are shallow to bedrock; in similar landform positions
- Areas with outcrops of sandstone bedrock; in landform positions similar to those of the Gilpin soil

Similar components:
- Lily soils, which are moderately deep to sandstone bedrock and have more sand in the subsoil than the Gilpin soil; in similar landform positions
- Soils that have more clay in the subsoil than the Gilpin soil; in similar landform positions
- Soils that are deep to shale bedrock; in landforms positions similar to those of the Gilpin soil

Soil Properties and Qualities

Available water capacity: Low (about 4.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low

Runoff class: High
Surface fragments: None
Parent material: Fine-loamy residuum weathered from shale and siltstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The use of mechanical planting equipment is impractical because of the slope.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- The low soil strength may cause structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: U
Hydric soil: No

24D—Gilpin-Berks complex, 25 to 35 percent slopes

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Ridges and spurs of mountains and hills
Position on the landform: Summits and shoulders
Size of areas: 5 to 50 acres

Map Unit Composition

Note: These Gilpin and Berks soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Gilpin and similar soils: Typically 55 percent, ranging from about 50 to 60 percent
Berks and similar soils: Typically 30 percent, ranging from about 25 to 40 percent

Typical Profile

Gilpin

(This pedon is representative of the Gilpin soils in the northern part of Russell County and differs from the pedon described in the section "Soil Series and Their Morphology." This representative pedon is located in Buchanan County, Virginia.)

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 3 inches—brown silt loam

Subsoil:
3 to 5 inches—yellowish brown silt loam
5 to 19 inches—yellowish brown gravelly silt loam
19 to 30 inches—yellowish brown gravelly loam

Substratum:
30 to 35 inches—strong brown very gravelly loam

Soft bedrock:
35 to 39 inches—reddish brown, strong brown, and brown shale bedrock

Hard bedrock:
39 inches—shale bedrock

Berks

(This pedon is representative of the Berks soils in the northern part of Russell County and differs from the pedon described in the section "Soil Series and Their Morphology." This representative pedon is located in Buchanan County, Virginia.)

Organic layer:
0 to 1 inch—very dark brown slightly decomposed plant material

Surface layer:
1 to 4 inches—dark yellowish brown silt loam

Subsoil:
4 to 8 inches—yellowish brown channery silt loam
8 to 23 inches—yellowish brown very channery silt loam

Substratum:
23 to 34 inches—yellowish brown extremely channery silt loam

Soft bedrock:
34 to 36 inches—shale bedrock

Hard bedrock:
36 inches—shale bedrock

Minor Components

Similar components:
- Soils that are similar to the Gilpin soil but have a seasonal high water table beginning in the lower part of the subsoil; on similar landforms
- Marrowbone soils, which have more sand than the Gilpin and Berks soils and have fewer rock fragments than the Berks soil; on similar landforms
- Soils that are deep to shale bedrock; on landforms to those of the Gilpin and Berks soils
- Soils that are similar to the Gilpin soil except that they have more sand in the substratum; on similar landforms

Dissimilar components:
- Wharton soils, which are moderately well drained and deep or very deep to bedrock; mostly on the highest points of the map unit and where slopes are less steep
- Soils that formed in residuum weathered from sandstone, have more sand than the Gilpin and Berks soils, and are shallow to bedrock; on similar landforms

Soil Properties and Qualities

Available water capacity: Gilpin—low (about 4.8 inches); Berks—low (about 3.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: Gilpin—20 to 40 inches to bedrock (paralithic); Berks—20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Gilpin—residuum weathered from sandstone and some shale and siltstone; Berks—residuum weathered from acid shale interbedded with fine-grained sandstone and siltstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Well suited to chestnut oak

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The use of mechanical planting equipment is impractical because of the slope.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: Gilpin—U; Berks—JJ
Hydric soils: No

24F—Gilpin-Berks complex, 35 to 70 percent slopes

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Ridges and spurs of mountains
Position on the landform: Summits and shoulders
Size of areas: 5 to 40 acres

Map Unit Composition

Note: These Gilpin and Berks soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Gilpin and similar soils: Typically 55 percent, ranging from about 50 to 60 percent
Berks and similar soils: Typically 35 percent, ranging from about 30 to 40 percent

Typical Profile

Gilpin

(This pedon is representative of the Gilpin soils in the northern part of Russell County and differs from the pedon described in the section “Soil Series and Their Morphology.” This representative pedon is located in Buchanan County, Virginia.)

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 3 inches—brown silt loam

Subsoil:
3 to 5 inches—yellowish brown silt loam
5 to 19 inches—yellowish brown gravelly silt loam
19 to 30 inches—yellowish brown gravelly loam

Substratum:
30 to 35 inches—strong brown very gravelly loam

Soft bedrock:
35 to 39 inches—reddish brown, strong brown, and brown shale bedrock

Hard bedrock:
39 inches—shale bedrock

Berks

(This pedon is representative of the Berks soils in the northern part of Russell County and differs from the pedon described in the section “Soil Series and Their Morphology.” This representative pedon is located in Buchanan County, Virginia.)

Organic layer:
0 to 1 inch—very dark brown slightly decomposed plant material

Surface layer:
1 to 4 inches—dark yellowish brown silt loam

Subsoil:
4 to 8 inches—yellowish brown channery silt loam
8 to 23 inches—yellowish brown very channery silt loam

Substratum:
23 to 34 inches—yellowish brown extremely channery silt loam

Soft bedrock:
34 to 36 inches—shale bedrock

Hard bedrock:
36 inches—shale bedrock

Minor Components

Similar components:
- Soils that formed in residuum weathered from shale that have textures similar to those of the Gilpin soil and that are deep to bedrock; on similar landforms
- Soils that formed in residuum weathered from shale that have textures similar to those of the Gilpin soil and the have a thinner solum; on similar landforms
- Soils that formed in residuum weathered from shale that have textures similar to those of the Gilpin soil and have thin lenses of coal or clay in the substratum; on similar landforms
- Soils that formed in residuum weathered from shale that have textures similar to those of the Gilpin soil and have a sandy substratum; on similar landforms
- Soils that formed in residuum weathered from shale that have textures similar to those of the Gilpin and Berks soils and are shallow to bedrock; on similar landforms
- Soils that have a slightly higher sand content than the Gilpin soil and are moderately deep to bedrock; on similar landforms

Dissimilar components:
- Soils that formed in residuum weathered from shale that have textures similar to those of the Berk soil and are very deep to bedrock; on similar landforms
- Soils formed in residuum weathered from sandstone that have loamy textures and are shallow to bedrock; on landforms similar to those of the Gilpin and Berks soils

Soil Properties and Qualities

Available water capacity: Gilpin—low (about 4.8 inches); Berks—low (about 3.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: Gilpin—20 to 40 inches to bedrock (paralithic); Berks—20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Gilpin—residuum weathered from sandstone and some shale and siltstone; Berks—residuum weathered from acid shale interbedded with fine-grained sandstone and siltstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Well suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The low soil strength may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: Gilpin—U; Berks—JJ
Hydric soils: No

25E—Gilpin-Shelocta silt loams, 35 to 55 percent slopes, very stony

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Mountains and hills on uplands and base of slopes of mountains and hills
Position on the landform: Gilpin—backslopes; Shelocta—footslopes and the lower backslopes
Size of areas: 5 to 600 acres

Map Unit Composition

Note: These Gilpin and Shelocta soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Gilpin and similar soils: Typically 65 percent, ranging from about 60 to 70 percent
Shelocta and similar soils: Typically 30 percent, ranging from about 25 to 35 percent

Typical Profile

Gilpin

Organic layer:
0 to 1 inch—moderately decomposed plant material

Surface layer:
1 to 3 inches—brown silt loam

Subsoil:
3 to 7 inches—dark yellowish brown silt loam
7 to 24 inches—yellowish brown silty clay loam
24 to 31 inches—yellowish brown channery silt loam

Soft bedrock:
31 inches—shale bedrock

Shelocta

Organic layer:
0 to 1 inch—moderately decomposed plant material

Surface layer:
1 to 3 inches—brown silt loam

Subsoil:
3 to 10 inches—yellowish brown silt loam; black iron-manganese concretions
10 to 18 inches—yellowish brown silty clay loam; black iron-manganese concretions

18 to 37 inches—yellowish brown gravelly silty clay loam; black iron-manganese concretions
37 to 55 inches—strong brown channery silty clay loam; black iron-manganese concretions

Substratum:
55 to 70 inches—strong brown extremely channery silty clay; black iron-manganese concretions

Minor Components

Dissimilar components:
- Oriskany soils, which have more rock fragments in the soil and on the surface than the Gilpin and Shelocta soils; on footslopes
- Wallen soils, which have more rock fragments and more sand than the Gilpin and Shelocta soils; in landform positions similar to those of the Gilpin soil
- Weikert soils, which have more rock fragments in the soil than the Gilpin and Shelocta soils and are shallow to bedrock; in landform positions similar to those of the Gilpin soil
- Holly soils, which which are poorly drained; adjacent to some drainageways
- Areas with outcrops of sandstone bedrock; in landform positions similar to those of the Gilpin and Shelocta soils

Similar components:
- Lily soils, which are moderately deep to sandstone bedrock and have more sand in the subsoil than the Gilpin and Shelocta soils; in similar landform positions
- Soils that are deep to bedrock; in landform positions similar to those of the Gilpin and Shelocta soils
- Soils that are similar to the Shelocta soil but have slightly more sand; in similar landform positions

Soil Properties and Qualities

Available water capacity: Gilpin—low (about 4.5 inches); Shelocta—moderate (about 7.6 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Gilpin—moderately deep (20 to 40 inches); Shelocta—very deep (more than 60 inches)
Depth to root-restrictive feature: Gilpin—20 to 40 inches to bedrock (paralithic); Shelocta—more than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: About 0.10 to less than 3.00 percent subrounded stones
Parent material: Gilpin—fine-loamy residuum weathered from shale and siltstone; Shelocta—fine-loamy colluvium derived from sandstone and shale

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- The low soil strength may cause structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: Gilpin—U; Shelocta—L
Hydric soils: No

26F—Gilpin-Shelocta silt loams, 55 to 70 percent slopes, rocky

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Mountains and hills on uplands and base of slopes of mountains and hills
Position on the landform: Gilpin—backslopes; Shelocta—footslopes and lower backslopes
Size of areas: 25 to 220 acres
Note: Rock outcrops are in scattered areas throughout the map unit; outcrops of sandstone or siltstone bedrock cover 0.1 to 2 percent of the surface

Map Unit Composition

Note: These Gilpin and Shelocta soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Gilpin and similar soils: Typically 60 percent, ranging from about 55 to 65 percent
Shelocta and similar soils: Typically 35 percent, ranging from about 30 to 40 percent

Typical Profile

Gilpin

Organic layer:
0 to 1 inch—moderately decomposed plant material

Surface layer:
1 to 3 inches—brown silt loam

Subsoil:
3 to 7 inches—dark yellowish brown silt loam
7 to 24 inches—yellowish brown silty clay loam
24 to 31 inches—yellowish brown channery silt loam

Soft bedrock:
31 inches—shale bedrock

Shelocta

Organic layer:
0 to 1 inch—moderately decomposed plant material

Surface layer:
1 to 3 inches—brown silt loam

Subsoil:
3 to 10 inches—yellowish brown silt loam; black iron-manganese concretions
10 to 18 inches—yellowish brown silty clay loam; black iron-manganese concretions
18 to 37 inches—yellowish brown gravelly silty clay loam; black iron-manganese concretions
37 to 55 inches—strong brown channery silty clay loam; black iron-manganese concretions

Substratum:
55 to 70 inches—strong brown extremely channery silty clay; black iron-manganese concretions

Minor Components

Dissimilar components:
- Areas that contain rock outcrops; in landform positions similar to those of the Gilpin soil
- Oriskany soils, which have more rock fragments in the soil and on the surface than the Gilpin and Shelocta soils; on footslopes
- Wallen soils, which have more rock fragments and more sand than the Gilpin and Shelocta soils; in landform positions similar to those of the Gilpin soil
- Weikert soils, which have more rock fragments in the soil than the Gilpin and Shelocta soils and are shallow to bedrock; on landform positions similar to those of the Gilpin soil
- Holly soils, which are poorly drained; adjacent to some drainageways

Similar components:
- Lily soils, which are moderately deep to sandstone bedrock and have more sand in the subsoil than the Gilpin and Shelocta soils; in similar landform positions
- Soils that are deep to bedrock; in landform positions similar to those of the Gilpin and Shelocta soils
- Soils that are similar to the Shelocta soil but have slightly more sand; in similar landform positions

Soil Properties and Qualities

Available water capacity: Gilpin—low (about 4.5 inches); Shelocta—moderate (about 7.6 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Gilpin—moderately deep (20 to 40 inches); Shelocta—very deep (more than 60 inches)
Depth to root-restrictive feature: Gilpin—20 to 40 inches to bedrock (paralithic); Shelocta—more than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: About 0.10 to 3.00 percent subrounded stones
Parent material: Gilpin—fine-loamy residuum weathered from shale and siltstone; Shelocta—fine-loamy colluvium derived from sandstone and shale

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is

reduced and the difficulty of constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- The low soil strength may cause structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: Gilpin—U; Shelocta—L
Hydric soils: No

27A—Grigsby sandy loam, 0 to 3 percent slopes, occasionally flooded

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125) and Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Flood plains along the Clinch River and small streams
Position on the landform: Flood-plain steps
Size of areas: 5 to 35 acres

Map Unit Composition

Grigsby and similar soils: Typically 95 percent, ranging from about 90 to 98 percent

Typical Profile

Surface layer:
0 to 13 inches—dark yellowish brown sandy loam

Subsoil:
13 to 17 inches—dark yellowish brown loam
17 to 43 inches—dark yellowish brown sandy loam
43 to 49 inches—strong brown sandy loam

Substratum:
49 to 65 inches—dark yellowish brown sandy loam

Minor Components

Dissimilar components:
- Lobdell soils, which are moderately well drained; in landform positions similar to those of the Grigsby soil

- Holly soils, which are poorly drained; in depressions and backswamps
- Ogles soils, which have more rock fragments in the soil and on the surface than the Grigsby soil; in similar landform positions
- Orrville soils, which are somewhat poorly drained; in landform positions similar to those of the Grigsby soil

Similar components:
- Soils that have more clay and less sand than the Grigsby soil; in similar landform positions
- Soils that have a surface layer that is darker and thicker than that of the Grigsby soil; in similar landform positions
- Soils that are deep to bedrock; in landform positions similar to those of the Grigsby soil

Soil Properties and Qualities

Available water capacity: Moderate (about 8.0 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: About 42 to 72 inches
Water table (kind): Apparent
Flooding hazard: Occasional
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very low
Surface fragments: None
Parent material: Coarse-loamy alluvium derived from sandstone and siltstone

Use and Management Considerations

Cropland

Suitability: Well suited to corn, grass-legume hay, and alfalfa hay
- Flooding may damage crops.

Pastureland

Suitability: Well suited
- Flooding may damage pastures.

Woodland

Suitability: Well suited to northern red oak and yellow-poplar; poorly suited to sweetgum
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should focus on streamside management zones and stream crossings and should include general adherence to all applicable best management practices.
- Flooding may damage haul roads.
- The safe use of roads by log trucks is restricted by the flooding.

Building sites

- Flooding is a limitation affecting building site development.
- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields

- Flooding is a limitation affecting septic tank absorption fields.
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Flooding may damage local roads and streets.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 1
Virginia soil management group: A
Hydric soil: No

28C—Highsplint channery silt loam, 8 to 15 percent slopes, very stony

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Base of slopes of mountains and hills and drainageways
Position on the landform: Footslopes and toeslopes
Size of areas: 5 to 25 acres

Map Unit Composition

Highsplint and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 3 inches—brown channery silt loam

Subsoil:
3 to 19 inches—dark yellowish brown channery silt loam
19 to 38 inches—dark yellowish brown very channery silt loam; many brown mottles
38 to 59 inches—yellowish brown very flaggy silt loam; many brown mottles

Substratum:
59 to 82 inches—yellowish brown very channery loam; common strong brown and many dark brown mottles

Minor Components

Similar components:
- Soils that formed in colluvium from sandstone, siltstone, and shale and have a surface horizon that is thicker and darker than that of the Highsplint soil; on north- and east-facing slopes
- Soils that are have fewer rock fragments than the Highsplint soil; on similar landforms

Dissimilar components:
- Soils that formed from sediments of sandstone and quartzite, have fewer rock fragments than the Highsplint soil, and are shallow to bedrock; on similar landforms

- Berks and Gilpin soils, which formed in shale residuum and are moderately deep to bedrock; on backslopes
- Marrowbone soils, which formed in sandstone residuum and are moderately deep to bedrock; on backslopes
- Moderately deep soils that formed in colluvium; in areas scattered throughout the unit but mostly on nose slopes and in convex areas
- Somewhat poorly drained soils; in drainageways

Soil Properties and Qualities

Available water capacity: Moderate (about 7.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: About 0.10 to less than 3.00 percent subrounded stones
Parent material: Colluvium derived from sandstone, siltstone, and shale

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Large stones on the surface may restrict the operation of some farm machinery.

Woodland

Suitability: Well suited to northern red oak and chestnut oak; moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks is reduced.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6s
Virginia soil management group: CC
Hydric soil: No

28D—Highsplint channery silt loam, 15 to 35 percent slopes, very stony

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Base of slopes of mountains and hills and drainageways
Position on the landform: Footslopes
Size of areas: 25 to 300 acres

Map Unit Composition

Highsplint and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 3 inches—brown channery silt loam

Subsoil:
3 to 19 inches—dark yellowish brown channery silt loam
19 to 38 inches—dark yellowish brown very channery silt loam; many brown mottles
38 to 59 inches—yellowish brown very flaggy silt loam; many brown mottles

Substratum:
59 to 82 inches—yellowish brown very channery loam; common strong brown and many dark brown mottles

Minor Components

Similar components:
- Soils that formed in colluvium from sandstone, siltstone, and shale and have a surface horizon that is thicker and darker than that of the Highsplint soil; on north- and east-facing slopes
- Soils that are have fewer rock fragments than the Highsplint soil; on similar landforms
- Soils that have less clay than the Highsplint soil; on similar landforms

Dissimilar components:
- Soils that formed from sediments of sandstone and quartzite, have fewer rock fragments than Highsplint soil, and are shallow to bedrock; on similar landforms
- Berks and Gilpin soils, which formed in shale residuum and are moderately deep to bedrock; on backsopes
- Marrowbone soils, which formed in sandstone residuum and are moderately deep to bedrock; on backslopes
- Moderately deep soils that formed in colluvium; in areas scattered throughout the map unit but mostly on nose slopes and in convex areas
- Somewhat poorly drained soils; in drainageways

Soil Properties and Qualities

Available water capacity: Moderate (about 7.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: About 0.10 to less than 3.00 percent subrounded stones
Parent material: Colluvium derived from sandstone, siltstone, and shale

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Well suited to northern red oak and chestnut oak; moderately suited to yellow-poplar

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The use of mechanical planting equipment is impractical because of the slope.
- The low soil strength may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: CC
Hydric soil: No

29F—Highsplint-Shelocta complex, 55 to 80 percent slopes, very stony

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Ridges and spurs of mountains and hills and drainageways
Position on the landform: Backslopes and footslopes, on slopes that face in a southward to westward direction
Size of areas: 25 to 300 acres

Map Unit Composition

Note: These Highsplint and Shelocta soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Highsplint and similar soils: Typically 55 percent, ranging from about 45 to 60 percent
Shelocta and similar soils: Typically 40 percent, ranging from about 35 to 45 percent

Typical Profile

Highsplint

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 3 inches—brown channery silt loam

Subsoil:
3 to 19 inches—dark yellowish brown channery silt loam
19 to 38 inches—dark yellowish brown very channery silt loam; many brown mottles
38 to 59 inches—yellowish brown very flaggy silt loam; many brown mottles

Substratum:
59 to 82 inches—yellowish brown very channery loam; common strong brown and many dark brown mottles

Shelocta

(This pedon is representative of the Shelocta soils in the northern part of Russell County and differs from the pedon described in the section "Soil Series and Their Morphology." This representative pedon is located in Buchanan County, Virginia.)

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 4 inches—dark grayish brown gravelly loam

Subsoil:
4 to 13 inches—yellowish brown loam
13 to 30 inches—strong brown gravelly silt loam; common dark yellowish brown mottles
30 to 50 inches—strong brown gravelly loam; common yellowish red mottles
50 to 62 inches—strong brown very gravelly loam; common yellowish brown mottles

Substratum:
62 to 86 inches—yellowish brown extremely gravelly loam; pale brown iron depletions and strong brown masses of oxidized iron

Minor Components

Similar components:
- Soils that formed in colluvium from sandstone, siltstone, and shale and have a surface horizon that is thicker and darker than that of the Highsplint and Shelocta soils; on north- and east-facing slopes
- Soils that are have fewer rock fragments than the Highsplint soil and have less clay than the Shelocta soil; on similar landforms
- Soils that have more rock fragments than the Shelocta soil and have less clay than the Highsplint soil; on similar landforms

Dissimilar components:
- Soils that formed from sediments of sandstone and quartzite, have fewer rock fragments than the Highsplint soil, and are shallow to bedrock; on similar landforms
- Soils that formed from sediments of sandstone or quartzite, have more rock fragments than the Shelocta soil, and are shallow to bedrock; on similar landforms

Soil Properties and Qualities

Available water capacity: Moderate (about 7.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: About 0.10 to less than 3.00 percent subrounded stones
Parent material: Colluvium derived from sandstone, siltstone, and shale

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Well suited to northern red oak and chestnut oak; moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: Highsplint—CC; Shelocta—L
Hydric soils: No

30A—Holly loam, 0 to 3 percent slopes, occasionally flooded

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125) and Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Flood plains along small creeks
Position on the landform: Flood-plain steps and backswamps
Size of areas: 3 to 30 acres

Map Unit Composition

Holly and similar soils: Typically 97 percent, ranging from about 90 to 98 percent

Typical Profile

Surface layer:
0 to 4 inches—dark gray loam; yellowish red masses of oxidized iron

Subsoil:
4 to 10 inches—gray loam; strong brown masses of oxidized iron
10 to 34 inches—dark gray loam; strong brown masses of oxidized iron

Substratum:
34 to 62 inches—dark gray loam

Minor Components

Dissimilar components:
- Chagrin soils, which are well drained; on flood-plain steps
- Lobdell soils, which are moderately well drained; on flood-plain steps

Similar components:
- Orrville soils, which are somewhat poorly drained; in landform positions similar to those of the Holly soil

Soil Properties and Qualities

Available water capacity: High (about 10.8 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.20 in/hr)
Depth class: Very deep (more than 60 inches)

Depth to root-restrictive feature: More than 60 inches
Drainage class: Poorly drained
Depth to seasonal water saturation: About 0 to 12 inches
Water table (kind): Apparent
Flooding hazard: Occasional
Ponding hazard: Occasional
Depth of ponding: 0.3 to 1.0 foot
Shrink-swell potential: Low
Runoff class: Negligible
Surface fragments: None
Parent material: Fine-loamy alluvium derived from limestone, sandstone, and shale

Use and Management Considerations

Cropland

Suitability: Poorly suited to corn; not suited to grass-legume hay and alfalfa hay
- Frost action may damage the root system of winter grain crops.
- Flooding may damage crops.
- The seasonal high water table restricts equipment operation, decreases the viability of crops, and interferes with the planting and harvesting of crops.

Pastureland

Suitability: Poorly suited
- Flooding may damage pastures.
- The seasonal high water table can affect equipment use, grazing patterns, and the viability of grass and legume species.
- Frost action may damage the root systems of plants.

Woodland

Suitability: Well suited to sweetgum
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should focus on streamside management zones and stream crossings and should include general adherence to all applicable best management practices.
- Flooding may damage haul roads.
- Flooding and ponding restrict the safe use of roads by log trucks.
- Soil wetness may limit the use of log trucks.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- Flooding and ponding are limitations affecting building site development.
- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields

- Flooding and ponding are limitations affecting septic tank absorption fields.
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Flooding may damage local roads and streets.
- Ponding affects the ease of excavation and grading and limits the bearing capacity of the soil.
- The low soil strength may cause structural damage to local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4w
Virginia soil management group: NN
Hydric soil: Yes

31D—Kaymine very channery silt loam, 15 to 35 percent slopes, extremely stony

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Ridges and spurs of mountains that have been surface mined for coal
Position on the landform: Summits, shoulders, and, in some areas, footslopes and backslopes
Size of areas: 5 to 50 acres
Note: Areas of this map unit have been surface mined for coal

Map Unit Composition

Kaymine and similar soils: Typically 90 percent, ranging from about 70 to 100 percent

Typical Profile

Surface layer:
0 to 4 inches—dark grayish brown very channery silt loam

Substratum:
4 to 28 inches—dark brown extremely channery silt loam; common dark grayish brown and common yellowish brown mottles
28 to 64 inches—dark brown very flaggy silt loam; common dark grayish brown and common yellowish brown mottles

Minor Components

Similar components:
- Soils that formed in mine spoil that have slightly more clay than the Kaymine soil; on similar landforms
- Fiveblock soils, which formed in mine spoil derived mainly from sandstone and have more sand and less silt and clay than the Kaymine soil; on similar landforms

Dissimilar components:
- Soils that formed in mine spoil and are somewhat poorly drained; in depressions
- Cedarcreek soils, which formed in mine spoil and have a more acidic reaction than the Kaymine soil; on similar landforms
- Sewell soils, which formed in mine spoil derived mainly from sandstone, have a more acidic reaction than the Kaymine soil, and have more sand; on similar landforms

Soil Properties and Qualities

Available water capacity: Moderate (about 6.8 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None

Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: About 2.50 to 9.00 percent subangular stones and about 0.50 to 1.00 percent subangular boulders
Parent material: Mine spoil or earthy fill derived from shale, siltstone, sandstone, and coal
Distinctive soil property: The soils in this map unit are subject to differential settling

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Well suited to northern red oak, yellow-poplar, and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The use of mechanical planting equipment is impractical because of the slope.
- The high content of stones or boulders on the surface may hinder the construction of haul roads and log landings.
- The amount of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.

Building sites

- Because of differential settling, this soil is not recommended for building site development.

Septic tank absorption fields

- Because of differential settling, this soil is not recommended for septic tank absorption fields.

Local roads and streets

- Differential settling of the soil may damage local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: JJ
Hydric soil: No

32E—Kaymine-Cedarcreek complex, 35 to 55 percent slopes, extremely stony

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Ridges and spurs of mountains that have been surface mined for coal
Position on the landform: Summits, shoulders, outslopes, and, in some areas, footslopes and backslopes
Size of areas: 5 to 50 acres
Note: Areas of this map unit have been surface mined for coal

Map Unit Composition

Note: These Kaymine and Cedarcreek soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Kaymine and similar soils: Typically 85 percent, ranging from about 70 to 95 percent
Cedarcreek and similar soils: Typically 15 percent, ranging from about 10 to 30 percent

Typical Profile

Kaymine

Surface layer:
0 to 4 inches—dark grayish brown very channery silt loam

Substratum:
4 to 28 inches—dark brown extremely channery silt loam; common dark grayish brown and common yellowish brown mottles
28 to 64 inches—dark brown very flaggy silt loam; common dark grayish brown and common yellowish brown mottles

Cedarcreek

Surface layer:
0 to 3 inches—very dark gray very channery loam

Substratum:
3 to 15 inches—olive brown very channery loam; common gray, common yellow, and common brown mottles
15 to 65 inches—dark olive gray extremely channery loam; common brown, common yellow, and common gray mottles

Minor Components

Similar components:
- Fiveblock and Sewell soils, which formed in mine spoil derived mainly from sandstone and have more sand and less silt than the Kaymine and Cedarcreek soils; on similar landforms

Dissimilar components:
- Soils that formed in mine spoil and are somewhat poorly drained; in areas of seeps and wet spots

Soil Properties and Qualities

Available water capacity: Kaymine—moderate (about 6.8 inches); Cedarcreek—low (about 3.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)

Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: About 2.50 to 9.00 percent subangular stones and about 0.50 to 1.00 percent subangular boulders
Parent material: Mine spoil or earthy fill derived from shale, siltstone, sandstone, and coal
Distinctive soil property: The soils in this map unit are subject to differential settling

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Well suited to northern red oak, yellow-poplar, and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The high content of stones or boulders on the surface may hinder the construction of haul roads and log landings.
- The amount of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.

Building sites

- Because of differential settling, these soils are not recommended for building site development.

Septic tank absorption fields

- Because of differential settling, these soils are not recommended for septic tank absorption fields.

Local roads and streets

- Differential settling of the soil may damage local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: JJ
Hydric soils: No

33F—Kaymine-Fiveblock complex, 55 to 80 percent slopes, extremely stony

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Ridges and spurs of mountains that have been surface mined for coal
Position on the landform: Backslopes, footslopes, and, in some areas, shoulders
Size of areas: 15 to 500 acres
Note: Areas of this map unit have been surface mined for coal

Map Unit Composition

Note: These Kaymine and Fiveblock soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Kaymine and similar soils: Typically 50 percent, ranging from about 40 to 60 percent
Fiveblock and similar soils: Typically 45 percent, ranging from about 35 to 55 percent

Typical Profile

Kaymine

Surface layer:
0 to 4 inches—dark grayish brown very channery silt loam

Substratum:
4 to 28 inches—dark brown extremely channery silt loam; common dark grayish brown and common yellowish brown mottles
28 to 64 inches—dark brown very flaggy silt loam; common dark grayish brown and common yellowish brown mottles

Fiveblock

Surface layer:
0 to 6 inches—brown very channery sandy loam

Substratum:
6 to 25 inches—brown very channery sandy loam; common brown and common yellow mottles
25 to 65 inches—dark grayish brown extremely channery sandy loam; common yellow and common brown mottles

Minor Components

Similar components:
- Sewell soils, which formed in mine spoil derived mainly from sandstone, have a more acidic reaction than the Fiveblock soil, and have more sand than the Kaymine soil; on similar landforms
- Cedarcreek soils, which have a more acidic reaction than the Kaymine soil; on similar landforms

Dissimilar components:
- Soils that formed in mine spoil and are somewhat poorly drained; in areas of seeps and wet spots

Soil Properties and Qualities

Available water capacity: Kaymine—moderate (about 6.8 inches); Fiveblock—very low (about 2.9 inches)
Slowest saturated hydraulic conductivity: Kaymine—moderately high (about 0.57 in/hr); Fiveblock—high (about 1.98 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Kaymine—well drained; Fiveblock—somewhat excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Kaymine—high; Fiveblock—medium
Surface fragments: About 2.50 to 9.00 percent subangular stones and about 0.50 to 1.00 percent subangular boulders
Parent material: Kaymine—mine spoil or earthy fill derived from shale, siltstone, sandstone, and coal; Fiveblock—mine spoil or earthy fill derived from sandstone and small amounts of siltstone, shale, and coal
Distinctive soil property: The soils in this map unit are subject to differential settling

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Well suited to northern red oak, yellow-poplar, and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The high content of stones or boulders on the surface may hinder the construction of haul roads and log landings.
- The amount of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.

- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.

Building sites

- Because of differential settling, these soils are not recommended for building site development.

Septic tank absorption fields

- Because of differential settling, these soils are not recommended for septic tank absorption fields.

Local roads and streets

- Differential settling of the soil may damage local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: JJ
Hydric soils: No

34C—Kaymine-Fiveblock-Cedarcreek complex, 0 to 15 percent slopes, extremely stony

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Ridges and spurs of mountains that have been surface mined for coal
Position on the landform: Summits, shoulders, and, in some areas, footslopes and backslopes
Size of areas: 5 to 125 acres
Note: Areas of this map unit have been surface mined for coal

Map Unit Composition

Note: These Kaymine, Fiveblock, and Cedarcreek soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Kaymine and similar soils: Typically 55 percent, ranging from about 40 to 75 percent
Fiveblock and similar soils: Typically 25 percent, ranging from about 10 to 35 percent
Cedarcreek and similar soils: Typically 20 percent, ranging from about 10 to 40 percent

Typical Profile

Kaymine

Surface layer:
0 to 4 inches—dark grayish brown very channery silt loam

Substratum:
4 to 28 inches—dark brown extremely channery silt loam; common dark grayish brown and common yellowish brown mottles
28 to 64 inches—dark brown very flaggy silt loam; common dark grayish brown and common yellowish brown mottles

Fiveblock

Surface layer:
0 to 6 inches—brown very channery sandy loam

Substratum:
6 to 25 inches—brown very channery sandy loam; common brown and common yellow mottles
25 to 65 inches—dark grayish brown extremely channery sandy loam; common yellow and common brown mottles

Cedarcreek

Surface layer:
0 to 3 inches—very dark gray very channery loam

Substratum:
3 to 15 inches—olive brown very channery loam; common gray, common yellow, and common brown mottles
15 to 65 inches—dark olive gray extremely channery loam; common brown, common yellow, and common gray mottles

Minor Components

Similar components:
- Sewell soils, which formed in mine spoil derived mainly from sandstone, have a more acidic reaction than the Fiveblock soil, and have more sand than the Kaymine and Cedarcreek soils; on similar landforms
- Soils that formed in mine spoil that have slightly more clay than the Kaymine soil; on similar landforms

Dissimilar components:
- Soils that formed in mine spoil that are somewhat poorly drained; in depressions

Soil Properties and Qualities

Available water capacity: Kaymine—moderate (about 6.8 inches); Fiveblock—very low (about 2.9 inches); Cedarcreek—low (about 3.5 inches)
Slowest saturated hydraulic conductivity: Kaymine and Cedarcreek—moderately high (about 0.57 in/hr); Fiveblock—high (about 1.98 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Kaymine and Cedarcreek—well drained; Fiveblock—somewhat excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Kaymine and Cedarcreek—medium; Fiveblock—low;
Surface fragments: About 2.50 to 9.00 percent subangular stones and about 0.50 to 1.00 percent subangular boulders
Parent material: Kaymine and Cedarcreek—mine spoil or earthy fill derived from shale, siltstone, sandstone, and coal; Fiveblock—mine spoil or earthy fill derived from sandstone and small amounts of siltstone, shale, and coal
Distinctive soil property: The soils in this map unit are subject to differential settling

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Well suited to northern red oak, yellow-poplar, and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks is reduced.
- The slope may restrict the use of some mechanical planting equipment.
- The high content of stones or boulders on the surface may hinder the construction of haul roads and log landings.
- The amount of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.

Building sites

- Because of differential settling, these soils are not recommended for building site development.

Septic tank absorption fields

- Because of differential settling, these soils are not recommended for septic tank absorption fields.

Local roads and streets

- Differential settling of the soil may damage local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: JJ
Hydric soils: No

35C—Lily loam, 8 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Mountains on uplands
Position on the landform: Summits and shoulders
Size of areas: 5 to 60 acres

Map Unit Composition

Lily and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 3 inches—very dark grayish brown loam

Subsoil:
3 to 7 inches—brown loam
7 to 24 inches—dark yellowish brown loam

Substratum:
24 to 28 inches—yellowish brown cobbly sandy loam

Hard bedrock:
28 inches—sandstone bedrock

Minor Components

Dissimilar components:
- Oriskany soils, which have more rock fragments in the soil and on the surface than the Lily soil and are very deep to bedrock; on footslopes
- Wallen soils, which have more rock fragments in the soil than the Lily soil; in similar landform positions
- Areas with outcrops of sandstone bedrock; in landform positions similar to those of the Lily soil

Similar components:
- Gilpin soils, which have less sand than the Lily soil; in similar landform positions that are underlain by shale bedrock
- Soils that have less clay in the subsoil than the Lily soil; in similar landform positions
- Soils that are deep to bedrock; in landform positions similar to those of the Lily soil

Soil Properties and Qualities

Available water capacity: Low (about 4.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Fine-loamy residuum weathered from sandstone

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The bedrock restricts the rooting depth of crops.
- Because of the limited available water capacity, plants may suffer from moisture stress.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Moderately suited to northern red oak and chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks is reduced.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- The low soil strength may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- The low soil strength may cause structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: U
Hydric soil: No

35D—Lily loam, 15 to 35 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Mountains on uplands
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 5 to 750 acres

Map Unit Composition

Lily and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 3 inches—very dark grayish brown loam

Subsoil:
3 to 7 inches—brown loam
7 to 24 inches—dark yellowish brown loam

Substratum:
24 to 28 inches—yellowish brown cobbly sandy loam

Hard bedrock:
28 inches—sandstone bedrock

Minor Components

Dissimilar components:
- Oriskany soils, which have more rock fragments in the soil and on the surface than the Lily soil and are very deep to bedrock; on footslopes
- Wallen soils, which have more rock fragments in the soil than the Lily soil; in similar landform positions
- Areas with outcrops of sandstone bedrock; in landform positions similar to those of the Lily soil

Similar components:
- Gilpin soils, which have less sand than the Lily soil; in similar landform positions that are underlain by shale bedrock
- Soils that have less clay in the subsoil than the Lily soil; in similar landform positions
- Soils that are deep to bedrock; in landform positions similar to those of the Lily soil

Soil Properties and Qualities

Available water capacity: Low (about 4.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: None
Parent material: Fine-loamy residuum weathered from sandstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Moderately suited to northern red oak and chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The use of mechanical planting equipment is impractical because of the slope.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- The low soil strength may cause structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: U
Hydric soil: No

35E—Lily loam, 35 to 55 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Mountains on uplands
Position on the landform: Backslopes
Size of areas: 10 to 250 acres

Map Unit Composition

Lily and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 3 inches—very dark grayish brown loam

Subsoil:
3 to 7 inches—brown loam
7 to 24 inches—dark yellowish brown loam

Substratum:
24 to 28 inches—yellowish brown cobbly sandy loam

Hard bedrock:
28 inches—sandstone bedrock

Minor Components

Dissimilar components:
- Oriskany soils, which have more rock fragments in the soil and on the surface than the Lily soil and are very deep to bedrock; on footslopes
- Wallen soils, which have more rock fragments in the soil than the Lily soil; in similar landform positions
- Areas with outcrops of sandstone bedrock; in landform positions similar to those of the Lily soil

Similar components:
- Gilpin soils, which have less sand than the Lily soil; in similar landform positions that are underlain by shale bedrock
- Soils that have less clay in the subsoil than the Lily soil; in similar landform positions
- Soils that are deep to bedrock; in similar landform positions

Soil Properties and Qualities

Available water capacity: Low (about 4.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: None
Parent material: Fine-loamy residuum weathered from sandstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.

- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- The low soil strength may cause structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: U
Hydric soil: No

36A—Lobdell-Orrville complex, 0 to 3 percent slopes, occasionally flooded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Flood plains along small creeks
Position on the landform: Flood-plain steps
Size of areas: 5 to 100 acres

Map Unit Composition

Note: These Lobdell and Orrville soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Lobdell and similar soils: Typically 65 percent, ranging from about 60 to 70 percent
Orrville and similar soils: Typically 30 percent, ranging from about 25 to 35 percent

Typical Profile

Lobdell

Surface layer:
0 to 8 inches—brown silt loam

Subsoil:
8 to 20 inches—yellowish brown silt loam; pale brown iron depletions and yellowish brown masses of oxidized iron

20 to 35 inches—yellowish brown loam; light gray iron depletions and yellowish brown masses of oxidized iron
35 to 48 inches—brown loam; yellowish brown masses of oxidized iron and light gray iron depletions

Substratum:
48 to 62 inches—light brownish gray and yellowish brown loam; very dark brown manganese masses

Orrville

Surface layer:
0 to 6 inches—dark grayish brown loam

Subsoil:
6 to 13 inches—yellowish brown loam; strong brown masses of oxidized iron and grayish brown iron depletions
13 to 28 inches—grayish brown loam; strong brown masses of oxidized iron
28 to 34 inches—grayish brown loam; brownish yellow masses of oxidized iron

Substratum:
34 to 47 inches—gray loam; brownish yellow masses of oxidized iron
47 to 62 inches—dark gray sandy loam

Minor Components

Dissimilar components:
- Chagrin soils, which are well drained; in landform positions similar to those of the Lobdell and Orrville soils
- Holly soils, which are dissimilar to the Lobdell soil but similar to the Orrville soil and which are poorly drained; in similar landform positions and in flood-plain backswamps

Similar components:
- Soils that have less clay and more sand than the Lobdell and Orrville soils; on similar landforms

Soil Properties and Qualities

Available water capacity: High (about 10.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Lobdell—moderately well drained; Orrville—somewhat poorly drained
Depth to seasonal water saturation: Lobdell—about 24 to 42 inches; Orrville—about 12 to 30 inches
Water table (kind): Apparent
Flooding hazard: Occasional
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Lobdell—low; Orrville—very high
Surface fragments: None
Parent material: Fine-loamy alluvium derived from limestone, sandstone, and shale

Use and Management Considerations

Cropland

Suitability: Well suited to corn and grass-legume hay; moderately suited to alfalfa hay
- Frost action may damage the root system of winter grain crops.

- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.
- Flooding may damage crops.

Pastureland

Suitability: Well suited
- Flooding may damage pastures.
- Frost action may damage the root systems of plants.

Woodland

Suitability: Moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should focus on streamside management zones and stream crossings and should include general adherence to all applicable best management practices.
- Flooding may damage haul roads.
- The safe use of roads by log trucks is restricted by the flooding.
- The low soil strength may create unsafe conditions for log trucks.

Building sites

- Flooding is a limitation affecting building site development.
- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields

- Flooding is a limitation affecting septic tank absorption fields.
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Flooding may damage local roads and streets.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.

Interpretive Groups

Prime farmland: Lobdell—prime farmland; Orrville—not prime farmland
Land capability class: Lobdell—2w; Orrville—4w
Virginia soil management group: Lobdell—G; Orrville—HH
Hydric soils: No

37D—Mandy-Paddyknob-Rock outcrop complex, 8 to 35 percent slopes, very stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Mountains on uplands
Position on the landform: Mandy—broad summits and upper backslopes; Paddyknob—summits and shoulders; Rock outcrop—areas throughout the map unit; all areas occur on the frigid mountaintop summits of Beartown Mountain at elevations ranging from about 4,200 to 4,700 feet
Size of areas: About 750 acres

Map Unit Composition

Note: These Mandy and Paddyknob soils and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Mandy and similar soils: Typically 45 percent, ranging from about 40 to 50 percent
Paddyknob and similar soils: Typically 40 percent, ranging from about 35 to 45 percent
Rock outcrop: Typically 10 percent, ranging from about 5 to 15 percent

Typical Profile

Mandy

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 4 inches—very dark brown channery silt loam

Subsurface layer:
4 to 6 inches—dark brown channery silt loam

Subsoil:
6 to 10 inches—dark yellowish brown channery silt loam
10 to 29 inches—yellowish brown very channery silt loam

Substratum:
29 to 37 inches—yellowish brown extremely channery silt loam

Soft bedrock:
37 inches—siltstone bedrock

Paddyknob

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 3 inches—very dark grayish brown very channery loam

Subsoil:
3 to 6 inches—dark yellowish brown very channery loam
6 to 26 inches—dark yellowish brown very channery sandy loam

Hard bedrock:
26 inches—sandstone bedrock

Rock outcrop

This part of the map unit consists of exposures of hard sandstone. In some areas the rock outcrops are near-vertical cliffs.

Minor Components

Dissimilar components:
- Soils that are very deep to bedrock; on footslopes and adjacent to drainageways
- Soils that are very deep to bedrock and moderately well drained; on footslopes and adjacent to drainageways
- Soils that are very deep to bedrock and poorly drained; on footslopes and adjacent to drainageways
- Soils that are very shallow to sandstone bedrock; on landforms similar to those of the Mandy and Paddyknob soils

Similar components:
- Soils that are redder and have less sand than the Paddyknob soil; on similar landforms
- Soils that have fewer rock fragments in the soil than the Mandy and Paddyknob soils; on similar landforms
- Soils that are shallow to bedrock; on landforms similar to those of the Mandy and Paddyknob soils

Properties and Qualities of the Mandy and Paddyknob Soils

Available water capacity: Mandy—low (about 4.1 inches); Paddyknob—very low (about 2.1 inches)
Slowest saturated hydraulic conductivity: Mandy—moderately high (about 0.57 in/hr); Paddyknob—high (about 5.95 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: Mandy—20 to 40 inches to bedrock (paralithic); Paddyknob—20 to 40 inches to bedrock (lithic)
Drainage class: Mandy—well drained; Paddyknob—somewhat excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: About 0.10 to less than 3.00 percent subangular stones
Parent material: Mandy—residuum weathered from interbedded siltstone, shale, and fine-grained sandstone; Paddyknob—residuum weathered from sandstone interbedded with shale and siltstone

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.
- The low soil strength may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Mandy and Paddyknob—7s; Rock outcrop—8s
Virginia soil management group: Mandy and Paddyknob—JJ; Rock outcrop—none assigned
Hydric soils: No

38D—Marrowbone fine sandy loam, 15 to 35 percent slopes, very stony

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Ridges and spurs of mountains and hills
Position on the landform: Summits and shoulders
Size of areas: 5 to 75 acres

Map Unit Composition

Marrowbone and similar soils: Typically 85 percent, ranging from about 75 to 95 percent

Typical Profile

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 5 inches—brown fine sandy loam

Subsoil:
5 to 10 inches—strong brown sandy loam
10 to 22 inches—strong brown gravelly sandy loam

Substratum:
22 to 33 inches—strong brown very gravelly loamy fine sand; common strong brown mottles

Soft bedrock:
33 to 45 inches—strong brown bedrock

Hard bedrock:
45 inches—bedrock

Minor Components

Similar components:
- Matewan soils, which formed in residuum weathered from sandstone, are moderately deep to bedrock, and have more rock fragments than the Marrowbone soil; on similar landforms
- Soils that formed in residuum weathered from sandstone and have more sand than the Marrowbone soil; on similar landforms
- Soils that formed in residuum weathered from sandstone and are shallow to bedrock; on landforms similar to those of the Marrowbone soil

Dissimilar components:
- Wharton soils, which formed in residuum weathered from shale, are very deep to bedrock, and are moderately well drained; on landforms similar to those of the Marrowbone soils
- Berks soils, which formed in residuum weathered from shale, siltstone, and fine-grained sandstone, contain more rock fragments than the Marrowbone soil, and are moderately deep to bedrock; on similar landforms
- Gilpin soils, which formed in residuum weathered from shale and siltstone and are moderately deep to bedrock; on landforms similar to those of the Marrowbone soil

Soil Properties and Qualities

Available water capacity: Very low (about 2.7 inches)
Slowest saturated hydraulic conductivity: High (about 1.98 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (paralithic) and 20 to 50 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: About 0.10 to less than 3.00 percent subangular stones
Parent material: Residuum weathered from sandstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.

- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The use of mechanical planting equipment is impractical because of the slope.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.
- Because of the high content of sand or gravel in the soil, sloughing is increased and cutbanks are more susceptible to caving.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: FF
Hydric soil: No

38E—Marrowbone fine sandy loam, 35 to 55 percent slopes, very stony

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Ridges and spurs of mountains
Position on the landform: Summits and shoulders
Size of areas: 5 to 100 acres

Map Unit Composition

Marrowbone and similar soils: Typically 85 percent, ranging from about 75 to 95 percent

Typical Profile

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 5 inches—brown fine sandy loam

Subsoil:
5 to 10 inches—strong brown sandy loam
10 to 22 inches—strong brown gravelly sandy loam

Substratum:
22 to 33 inches—strong brown very gravelly loamy fine sand; common strong brown mottles

Soft bedrock:
33 to 45 inches—strong brown bedrock

Hard bedrock:
45 inches—bedrock

Minor Components

Similar components:
- Matewan soils, which formed in residuum weathered from sandstone, are moderately deep to bedrock, and have more rock fragments than the Marrowbone soil; on similar landforms
- Soils that formed in residuum weathered from sandstone and have more clay than the Marrowbone soil; on similar landforms
- Soils that formed in residuum weathered from sandstone and have more sand than the Marrowbone soil; on similar landforms
- Soils that formed in residuum weathered from sandstone and are deep to bedrock; on landforms similar to those of the Marrowbone soil
- Soils that formed in residuum weathered from sandstone and are shallow to bedrock; on landforms similar to those of the Marrowbone soil

Dissimilar components:
- Soils that formed in residuum weathered from sandstone, are very deep to bedrock, and have more sand than the Marrowbone soil; on similar landforms
- Berks soils, which formed in residuum weathered from shale, siltstone, and fine-grained sandstone, contain more rock fragments than the Marrowbone soil, and are moderately deep to bedrock; on similar landforms
- Gilpin soils, which formed in residuum weathered from shale and siltstone and are moderately deep to bedrock; on landforms similar to those of the Marrowbone soil

Soil Properties and Qualities

Available water capacity: Very low (about 2.7 inches)
Slowest saturated hydraulic conductivity: High (about 1.98 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (paralithic) and 20 to 50 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: About 0.10 to less than 3.00 percent subangular stones
Parent material: Residuum weathered from sandstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.
- Because of the high content of sand or gravel in the soil, sloughing is increased and cutbanks are more susceptible to caving.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: FF
Hydric soil: No

38F—Marrowbone fine sandy loam, 55 to 70 percent slopes, very stony

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Ridges and spurs of mountains
Position on the landform: Summits and shoulders
Size of areas: 5 to 100 acres

Map Unit Composition

Marrowbone and similar soils: Typically 85 percent, ranging from about 75 to 95 percent

Typical Profile

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 5 inches—brown fine sandy loam

Subsoil:
5 to 10 inches—strong brown sandy loam
10 to 22 inches—strong brown gravelly sandy loam

Substratum:
22 to 33 inches—strong brown very gravelly loamy fine sand; common strong brown mottles

Soft bedrock:
33 to 45 inches—strong brown bedrock

Hard bedrock:
45 inches—bedrock

Minor Components

Similar components:
- Matewan soils, which formed in residuum weathered from sandstone, are moderately deep to bedrock, and have more rock fragments than the Marrowbone soil; on similar landforms
- Soils that formed in residuum weathered from sandstone and have more clay than the Marrowbone soil; on similar landforms
- Soils that formed in residuum weathered from sandstone and have more sand than the Marrowbone soil; on similar landforms
- Soils that formed in residuum weathered from sandstone and are deep to bedrock; on landforms similar to those of the Marrowbone soil
- Soils that formed in residuum weathered from sandstone and are shallow to bedrock; on landforms similar to those of the Marrowbone soil

Dissimilar components:
- Soils that formed in residuum weathered from sandstone, are very deep to bedrock, and have more sand than the Marrowbone soil; on similar landforms
- Berks soils, which formed in residuum weathered from shale, siltstone, and fine-grained sandstone, contain more rock fragments than the Marrowbone soil, and are moderately deep to bedrock; on similar landforms
- Gilpin soils, which formed in residuum weathered from shale and siltstone and are moderately deep to bedrock; on landforms similar to those of the Marrowbone soil

Soil Properties and Qualities

Available water capacity: Very low (about 2.7 inches)
Slowest saturated hydraulic conductivity: High (about 1.98 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (paralithic) and 20 to 50 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: About 0.10 to less than 3.00 percent subangular stones
Parent material: Residuum weathered from sandstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.
- Because of the high content of sand or gravel in the soil, sloughing is increased and cutbanks are more susceptible to caving.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

• Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: FF
Hydric soil: No

39D—Marrowbone-Gilpin complex, 15 to 25 percent slopes

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Ridges and spurs of mountains and hills
Position on the landform: Summits and shoulders
Size of areas: 5 to 75 acres

Map Unit Composition

Note: These Marrowbone and Gilpin soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Marrowbone and similar soils: Typically 50 percent, ranging from about 45 to 55 percent
Gilpin and similar soils: Typically 45 percent, ranging from about 40 to 55 percent

Typical Profile

Marrowbone

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 5 inches—brown fine sandy loam

Subsoil:
5 to 10 inches—strong brown sandy loam
10 to 22 inches—strong brown gravelly sandy loam

Substratum:
22 to 33 inches—strong brown very gravelly loamy fine sand; common strong brown mottles

Soft bedrock:
33 to 45 inches—strong brown bedrock

Hard bedrock:
45 inches—bedrock

Gilpin

(This pedon is representative of the Gilpin soils in the northern part of Russell County and differs from the pedon described in the section "Soil Series and Their Morphology." This representative pedon is located in Buchanan County, Virginia.)

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 3 inches—brown silt loam

Subsoil:
3 to 5 inches—yellowish brown silt loam
5 to 19 inches—yellowish brown gravelly silt loam
19 to 30 inches—yellowish brown gravelly loam

Substratum:
30 to 35 inches—strong brown very gravelly loam

Soft bedrock:
35 to 39 inches—reddish brown, strong brown, and brown bedrock

Hard bedrock:
39 inches—bedrock

Minor Components

Similar components:
- Matewan soils, which formed in residuum weathered from sandstone, are moderately deep to bedrock, and have more rock fragments than the Marrowbone and Gilpin soils; on similar landforms
- Berks soils, which formed in residuum weathered from shale, siltstone, and fine-grained sandstone, contain more rock fragments than the Marrowbone and Gilpin soils, and are moderately deep to bedrock; on similar landforms
- Soils that formed in residuum weathered from sandstone and have more sand than the Marrowbone soil; on similar landforms
- Soils that formed in residuum weathered from shale, are moderately deep to bedrock, have textures similar to those of the Gilpin soil, and are moderately well drained; on similar landforms
- Soils that formed in residuum weathered from sandstone and are shallow to bedrock; on landforms similar to those of the Marrowbone and Gilpin soils
- Soils that are similar to the Gilpin soil except that they have a sandy substratum; on similar landforms

Dissimilar components:
- Wharton soils, which formed in residuum weathered from shale, are very deep to bedrock, and are moderately well drained; on landforms similar to those of the Marrowbone and Gilpin soils

Soil Properties and Qualities

Available water capacity: Marrowbone—very low (about 2.7 inches); Gilpin—low (about 4.8 inches)
Slowest saturated hydraulic conductivity: Marrowbone—high (about 1.98 in/hr); Gilpin—moderately high (about 0.57 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: Marrowbone—20 to 40 inches to bedrock (paralithic) and 20 to 50 inches to bedrock (lithic); Gilpin—20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None

Parent material: Marrowbone—residuum weathered from sandstone; Gilpin—residuum weathered from sandstone and some shale and siltstone

Use and Management Considerations

Cropland

Suitability: Moderately suited to grass-legume hay; poorly suited to corn; not suited to alfalfa hay

- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The bedrock restricts the rooting depth of crops.

Pastureland

Suitability: Moderately suited

- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Moderately suited to chestnut oak

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.
- Because of the high content of sand or gravel in the soil, sloughing is increased and cutbanks are more susceptible to caving.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: Marrowbone—FF; Gilpin—U
Hydric soils: No

39E—Marrowbone-Gilpin complex, 25 to 35 percent slopes

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Ridges and spurs of mountains
Position on the landform: Summits and shoulders
Size of areas: 5 to 125 acres

Map Unit Composition

Note: These Marrowbone and Gilpin soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Marrowbone and similar soils: Typically 60 percent, ranging from about 55 to 65 percent
Gilpin and similar soils: Typically 35 percent, ranging from about 30 to 40 percent

Typical Profile

Marrowbone

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 5 inches—brown fine sandy loam

Subsoil:
5 to 10 inches—strong brown sandy loam
10 to 22 inches—strong brown gravelly sandy loam

Substratum:
22 to 33 inches—strong brown very gravelly loamy fine sand; common strong brown mottles

Soft bedrock:
33 to 45 inches—strong brown bedrock

Hard bedrock:
45 inches—bedrock

Gilpin

(This pedon is representative of the Gilpin soils in the northern part of Russell County and differs from the pedon described in the section “Soil Series and Their Morphology.” This representative pedon is located in Buchanan County, Virginia.)

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 3 inches—brown silt loam

Subsoil:
3 to 5 inches—yellowish brown silt loam
5 to 19 inches—yellowish brown gravelly silt loam
19 to 30 inches—yellowish brown gravelly loam

Substratum:
30 to 35 inches—strong brown very gravelly loam

Soft bedrock:
35 to 39 inches—reddish brown, strong brown, and brown bedrock

Hard bedrock:
39 inches—bedrock

Minor Components

Similar components:
- Berks soils, which formed in residuum weathered from shale and have more rock fragments than the Gilpin soil
- Soils that formed in residuum weathered from sandstone, have more sand than the Gilpin soil, have more clay than the Marrowbone soil, and are either moderately deep or deep to bedrock; on similar landforms
- Soils that formed in residuum weathered from sandstone, have more sand than the Marrowbone soil, and are either moderately deep or deep to bedrock; on similar landforms
- Soils that formed in residuum weathered from sandstone, have textures similar to those of the Marrowbone soil, and are deep to bedrock; on similar landforms
- Soils that formed in residuum weathered from sandstone, have textures similar to those of the Marrowbone soil, and have a thinner solum; on similar landforms
- Soils that formed in residuum weathered from sandstone and are shallow to bedrock; on landforms similar to those of the Marrowbone and Gilpin soils
- Soils that are similar to the Gilpin soil except that they have a sandy substratum; on similar landforms
- Soils that formed in residuum weathered from shale, have textures similar to those of the Gilpin soil, and are shallow to bedrock; on similar landforms
- Soils that formed in residuum weathered from shale, have textures similar to those of the Gilpin soil, and are deep to bedrock; on similar landforms
- Soils that formed in residuum weathered from shale, are moderately deep to bedrock, have textures similar to those of the Gilpin soil, and are moderately well drained; on similar landforms

Dissimilar components:
- Wharton soils, which formed in residuum weathered from shale, are very deep to bedrock, and are moderately well drained; on summits and saddles where the slope is less steep

Soil Properties and Qualities

Available water capacity: Marrowbone—very low (about 2.7 inches); Gilpin—low (about 4.8 inches)
Slowest saturated hydraulic conductivity: Marrowbone—high (about 1.98 in/hr); Gilpin—moderately high (about 0.57 in/hr)
Depth class: Moderately deep (20 to 40 inches)

Depth to root-restrictive feature: Marrowbone—20 to 40 inches to bedrock (paralithic) and 20 to 50 inches to bedrock (lithic); Gilpin—20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Marrowbone—residuum weathered from sandstone; Gilpin—residuum weathered from sandstone and some shale and siltstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

Suitability: Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Moderately suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The use of mechanical planting equipment is impractical because of the slope.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.
- Because of the high content of sand or gravel in the soil, sloughing is increased and cutbanks are more susceptible to caving.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: Marrowbone—FF; Gilpin—U
Hydric soils: No

39F—Marrowbone-Gilpin complex, 35 to 70 percent slopes

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Ridges and spurs of mountains
Position on the landform: Summits and shoulders
Size of areas: 5 to 100 acres

Map Unit Composition

Note: These Marrowbone and Gilpin soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Marrowbone and similar soils: Typically 75 percent, ranging from about 70 to 80 percent
Gilpin and similar soils: Typically 15 percent, ranging from about 15 to 20 percent

Typical Profile

Marrowbone

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 5 inches—brown fine sandy loam

Subsoil:
5 to 10 inches—strong brown sandy loam
10 to 22 inches—strong brown gravelly sandy loam

Substratum:
22 to 33 inches—strong brown very gravelly loamy fine sand; common strong brown mottles

Soft bedrock:
33 to 45 inches—strong brown bedrock

Hard bedrock:
45 inches—bedrock

Gilpin

(This pedon is representative of the Gilpin soils in the northern part of Russell County and differs from the pedon described in the section “Soil Series and Their Morphology.” This representative pedon is located in Buchanan County, Virginia.)

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 3 inches—brown silt loam

Subsoil:
3 to 5 inches—yellowish brown silt loam
5 to 19 inches—yellowish brown gravelly silt loam
19 to 30 inches—yellowish brown gravelly loam

Substratum:
30 to 35 inches—strong brown very gravelly loam

Soft bedrock:
35 to 39 inches—reddish brown, strong brown, and brown bedrock

Hard bedrock:
39 inches—bedrock

Minor Components

Similar components:
- Matewan soils, which formed in residuum weathered from sandstone, are moderately deep to bedrock, and have more rock fragments than the Marrowbone and Gilpin soils; on similar landforms
- Soils that formed in residuum weathered from sandstone, have more sand than the Gilpin soil, and have more clay than the Marrowbone soil; on similar landforms
- Soils that formed in residuum weathered from sandstone and have more sand than the Marrowbone soil; on similar landforms
- Soils that formed in residuum weathered from sandstone and are deep to bedrock; on landforms similar to those of the Marrowbone and Gilpin soils
- Soils that formed in residuum weathered from sandstone and are shallow to bedrock; on landforms similar to those of the Marrowbone and Gilpin soils
- Soils that are similar to the Gilpin soil except that they have a sandy substratum; on similar landforms

Dissimilar components:
- Soils that formed in residuum weathered from sandstone, are very deep to bedrock, and have more sand than the Marrowbone soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Marrowbone—very low (about 2.7 inches); Gilpin—low (about 4.8 inches)
Slowest saturated hydraulic conductivity: Marrowbone—high (about 1.98 in/hr); Gilpin—moderately high (about 0.57 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: Marrowbone—20 to 40 inches to bedrock (paralithic) and 20 to 50 inches to bedrock (lithic); Gilpin—20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None

Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Marrowbone—residuum weathered from sandstone; Gilpin—residuum weathered from sandstone and some shale and siltstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Moderately suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.
- Because of the high content of sand or gravel in the soil, sloughing is increased and cutbanks are more susceptible to caving.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: Marrowbone—FF; Gilpin—U
Hydric soils: No

40F—Matewan-Rock outcrop complex, 55 to 80 percent slopes, extremely stony

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Ridges and spurs of mountains and hills
Position on the landform: Backslopes
Size of areas: 5 to 300 acres

Map Unit Composition

Note: This Matewan soil and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Matewan and similar soils: Typically 45 percent, ranging from about 40 to 50 percent
Rock outcrop: Typically 40 percent, ranging from about 35 to 45 percent

Typical Profile

Matewan

Organic layer:
0 to 1 inch—moderately decomposed plant material

Surface layer:
1 to 4 inches—dark brown flaggy fine sandy loam

Subsoil:
4 to 21 inches—dark yellowish brown very flaggy fine sandy loam

Substratum:
21 to 31 inches—yellowish brown very gravelly sandy loam
31 to 38 inches—strong brown extremely gravelly sandy loam; many yellowish brown mottles

Hard bedrock:
38 inches—sandstone bedrock

Rock outcrop

This part of the map unit consists of outcrops of hard sandstone bedrock that are a few inches to several feet in height. Some outcrops are near-vertical cliffs

Minor Components

Similar components:
- Marrowbone soils, which have fewer rock fragments than the Matewan soil; in areas scattered throughout the map unit
- Colluvial soils, which are moderately deep to bedrock and have many rock fragments; in areas scattered throughout the map unit and in drainageways
- Colluvial soils, which are deep to bedrock and have many rock fragments; in areas scattered throughout the map unit and in drainageways
- Residual soils, which formed in sandstone, are moderately deep to bedrock, and

have fewer rock fragments than the Matewan soil; in areas scattered throughout the map unit
- Residual soils, which formed in sandstone and are shallow to bedrock; in areas scattered throughout the map unit
- Residual soils, which formed in sandstone and are very shallow to bedrock; mostly near rock outcrops

Dissimilar components:
- Soils that are very deep to bedrock, formed from sandstone, and have a sandy-skeletal particle size; on landforms similar to those of the Matewan soil

Properties and Qualities of the Matewan Soil

Available water capacity: Low (about 3.1 inches)
Slowest saturated hydraulic conductivity: High (about 2.00 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: About 3.00 to less than 15.00 percent subangular stones
Parent material: Residuum weathered from sandstone

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pastureland.

Woodland

Suitability: Moderately suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The high content of stones or boulders on the surface may hinder the construction of haul roads and log landings.
- The amount of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Matewan—7s; Rock outcrop—8s
Virginia soil management group: Matewan—FF; Rock outcrop—none assigned
Hydric soils: No

41A—Ogles very stony loam, 0 to 3 percent slopes, occasionally flooded

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125) and Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Flood plains along small creeks and major rivers (fig. 7)
Position on the landform: Flood-plain steps
Size of areas: 5 to 120 acres

Map Unit Composition

Ogles and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 6 inches—very dark brown very stony loam

Subsoil:
6 to 10 inches—dark yellowish brown very stony loam
10 to 23 inches—yellowish brown extremely stony sandy loam

Substratum:
23 to 65 inches—dark yellowish brown extremely stony loamy sand

Figure 7.—An area of Ogles very stony loam, 0 to 3 percent slopes, occasionally flooded. This soil is commonly used as pastureland; however, large stones on the surface are a management concern.

Minor Components

Dissimilar components:
- Soils that have significantly fewer rock fragments in the soil and on the surface than the Ogles soil; in similar landform positions
- Soils that are either poorly drained, somewhat poorly drained, or moderately well drained; in landform positions similar to those of the Ogles soil

Similar components:
- Soils that have slightly fewer rock fragments in the soil than the Ogles soil; on similar landforms
- Soils that have more stones on the soil surface than the Ogles soil; on similar landforms
- Soils that are less acid in reaction than the Ogles soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Moderate (about 7.0 inches)
Slowest saturated hydraulic conductivity: High (about 1.98 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: About 42 to 72 inches
Water table (kind): Apparent
Flooding hazard: Occasional
Ponding hazard: None

Shrink-swell potential: Low
Runoff class: Very low
Surface fragments: About 0.00 to less than 0.01 percent well rounded stones and about 3.00 to 10.00 percent well rounded cobbles
Parent material: Stony, loamy alluvium derived from sandstone and shale

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Moderately suited
- Flooding may damage pastures.
- Large stones on the surface may restrict the operation of some farm machinery.

Woodland

Suitability: Moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should focus on streamside management zones and stream crossings and should include general adherence to all applicable best management practices.
- Flooding may damage haul roads.
- The safe use of roads by log trucks is restricted by the flooding.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- Flooding is a limitation affecting building site development.
- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields

- Flooding is a limitation affecting septic tank absorption fields.
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Flooding may damage local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6s
Virginia soil management group: CC
Hydric soil: No

42C—Oriskany very cobbly fine sandy loam, 8 to 15 percent slopes, extremely stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)

Figure 8.—A typical area of Oriskany very cobbly fine sandy loam, 8 to 15 percent slopes, extremely stony.

Landform: Base of slopes of hills and mountains and valleys (fig. 8)
Position on the landform: Footslopes and toeslopes
Size of areas: 5 to 35 acres

Map Unit Composition

Oriskany and similar soils: Typically 75 percent, ranging from about 70 to 80 percent

Typical Profile

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 6 inches—very dark grayish brown very cobbly fine sandy loam

Subsurface layer:
6 to 10 inches—yellowish brown very cobbly fine sandy loam

Subsoil:
10 to 17 inches—light yellowish brown very gravelly loam
17 to 26 inches—reddish yellow very gravelly loam
26 to 36 inches—reddish yellow very cobbly loam; common very pale brown mottles
36 to 52 inches—strong brown very cobbly clay loam; common very pale brown mottles
52 to 70 inches—reddish yellow very cobbly sandy clay loam; common yellowish brown mottles

Minor Components

Dissimilar components:
- Berks, Carbo, Gilpin, and Wallen soils, which are moderately deep to bedrock; on uplands
- Westmoreland soils, which are deep to bedrock; on uplands
- Soils that are moderately well drained and have fewer rock fragments in the soil and on the surface than the Oriskany soil; on footslopes and treads
- Ogles soils, which are susceptible to flooding; on flood plains
- Tumbling soils, which have fewer rock fragments in the soil and on the surface than the Oriskany soil and have more clay; in similar landform positions

Similar components:
- Colluvial soils that have slightly fewer rock fragments in the soil than the Oriskany soil; on similar landforms
- Areas that have either slightly more or fewer rock fragments on the surface than the Oriskany soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Moderate (about 6.4 inches)
Slowest saturated hydraulic conductivity: High (about 1.98 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Low
Surface fragments: About 3.00 to 14.00 percent subrounded stones and about 0.00 to 1.00 percent subrounded boulders
Parent material: Stony, loamy colluvium derived from sandstone and shale

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks is reduced.
- The slope may restrict the use of some mechanical planting equipment.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: CC
Hydric soil: No

42D—Oriskany very cobbly fine sandy loam, 15 to 35 percent slopes, extremely stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and mountains and valleys
Position on the landform: Footslopes
Size of areas: 5 to 75 acres

Map Unit Composition

Oriskany and similar soils: Typically 75 percent, ranging from about 70 to 80 percent

Typical Profile

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 6 inches—very dark grayish brown very cobbly fine sandy loam

Subsurface layer:
6 to 10 inches—yellowish brown very cobbly fine sandy loam

Subsoil:
10 to 17 inches—light yellowish brown very gravelly loam
17 to 26 inches—reddish yellow very gravelly loam
26 to 36 inches—reddish yellow very cobbly loam; common very pale brown mottles
36 to 52 inches—strong brown very cobbly clay loam; common very pale brown mottles
52 to 70 inches—reddish yellow very cobbly sandy clay loam; common yellowish brown mottles

Minor Components

Dissimilar components:
- Berks, Carbo, Gilpin, and Wallen soils, which are moderately deep to bedrock; on uplands
- Westmoreland soils, which are deep to bedrock; on uplands
- Soils that are moderately well drained and have fewer rock fragments in the soil and on the surface than the Oriskany soil; on footslopes and treads
- Tumbling soils, which have fewer rock fragments in the soil and on the surface than the Oriskany soil and have more clay; in similar landform positions

Similar components:
- Colluvial soils that have slightly fewer rock fragments in the soil than the Oriskany soil; on similar landforms
- Areas that have either slightly more or fewer rock fragments on the surface than the Oriskany soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Moderate (about 6.4 inches)
Slowest saturated hydraulic conductivity: High (about 1.98 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: About 3.00 to 14.00 percent subrounded stones and about 0.00 to 1.00 percent subrounded boulders
Parent material: Stony, loamy colluvium derived from sandstone and shale

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The use of mechanical planting equipment is impractical because of the slope and the content of rock fragments.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: CC
Hydric soil: No

42E—Oriskany very cobbly fine sandy loam, 35 to 55 percent slopes, extremely stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and mountains and hills and mountains
Position on the landform: Footslopes and lower backslopes
Size of areas: 15 to 300 acres

Map Unit Composition

Oriskany and similar soils: Typically 75 percent, ranging from about 70 to 80 percent

Typical Profile

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 6 inches—very dark grayish brown very cobbly fine sandy loam

Subsurface layer:
6 to 10 inches—yellowish brown very cobbly fine sandy loam

Subsoil:
10 to 17 inches—light yellowish brown very gravelly loam
17 to 26 inches—reddish yellow very gravelly loam
26 to 36 inches—reddish yellow very cobbly loam; common very pale brown mottles
36 to 52 inches—strong brown very cobbly clay loam; common very pale brown mottles
52 to 70 inches—reddish yellow very cobbly sandy clay loam; common yellowish brown mottles

Minor Components

Dissimilar components:
- Berks, Carbo, Gilpin, and Wallen soils, which are moderately deep to bedrock; on uplands
- Westmoreland soils, which are deep to bedrock; on uplands
- Tumbling soils, which have fewer rock fragments in the soil and on the surface than the Oriskany soil and have more clay; in similar landform positions
- Areas with outcrops of sandstone bedrock; in landform positions similar to those of the Oriskany soil

Similar components:
- Colluvial soils that have slightly fewer rock fragments in the soil than the Oriskany soil; on similar landforms
- Areas with either slightly more or fewer rock fragments on the surface than the Oriskany soil; on similar landforms

Soil Properties and Qualities

Available water capacity: Moderate (about 6.4 inches)
Slowest saturated hydraulic conductivity: High (about 1.98 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: About 3.00 to 14.00 percent subrounded stones and about 0.00 to 1.00 percent subrounded boulders
Parent material: Stony, loamy colluvium derived from sandstone and shale

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The use of mechanical planting equipment is impractical because of the slope and the content of rock fragments.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: CC
Hydric soil: No

Figure 9.—A typical area of Pits, quarry, where limstone is actively being processed for the production of gravel and mine dust.

43—Pits, quarry

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Uplands used for limestone quarries (fig. 9)

Map Unit Composition

Pits, quarry: Typically 95 percent, ranging from about 90 to 100 percent

Typical Profile

This map unit occurs as open excavations and rock piles in limestone gravel quarries. Because of the variability of the material, a typical profile is not given.

Use and Management Considerations

Onsite investigation is needed to determine the suitability of any area for specific uses.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: None assigned

Virginia soil management group: None assigned
Hydric soils: No

44C—Poplimento-Westmoreland complex, 8 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains on uplands
Position on the landform: Summits and shoulders
Size of areas: 5 to 75 acres

Map Unit Composition

Note: These Poplimento and Westmoreland soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Poplimento and similar soils: Typically 45 percent, ranging from about 30 to 55 percent
Westmoreland and similar soils: Typically 40 percent, ranging from about 30 to 50 percent

Typical Profile

Poplimento

Surface layer:
0 to 5 inches—dark yellowish brown silty clay loam

Subsoil:
5 to 20 inches—yellowish red silty clay
20 to 35 inches—yellowish red silty clay; many yellow mottles
35 to 50 inches—yellowish red and brownish yellow silty clay loam
50 to 60 inches—yellowish red and brownish yellow channery silty clay loam

Westmoreland

Surface layer:
0 to 6 inches—dark brown silt loam

Subsoil:
6 to 23 inches—yellowish brown silty clay loam
23 to 36 inches—yellowish brown channery silty clay loam

Substratum:
36 to 54 inches—yellowish brown very channery silt loam

Hard bedrock:
54 inches—shale bedrock

Minor Components

Dissimilar components:
- Carbo soils, which have more clay than the Westmoreland soil and are moderately deep to limestone bedrock; in similar landform positions
- Oriskany soils, which are very deep to bedrock and have more rock fragments in the soil than the Poplimento and Westmoreland soils; on footslopes
- Areas with outcrops of sandstone bedrock; in landform positions similar to those of the Poplimento and Westmoreland soils
- Weikert soils, which are shallow to shale bedrock; in landform positions similar to those of the Poplimento and Westmoreland soils

- Calvin soils, which are redder in the subsoil than the Poplimento and Westmoreland soils; in similar landform positions at higher elevations
- Berks soils, which are moderately deep to bedrock and have more rock fragments in the soil than the Poplimento and Westmoreland soils; in similar landform positions

Similar components:
- Shelocta soils, which are very deep to bedrock; on footslopes
- Areas that are severely eroded; in landform positions similar to those of the Poplimento and Westmoreland soils

Soil Properties and Qualities

Available water capacity: Poplimento—moderate (about 8.1 inches); Westmoreland—moderate (about 8.6 inches)
Slowest saturated hydraulic conductivity: Poplimento—moderately high (about 0.20 in/hr); Westmoreland—moderately high (about 0.57 in/hr)
Depth class: Poplimento—very deep (more than 60 inches); Westmoreland—deep (40 to 60 inches)
Depth to root-restrictive feature: Poplimento—more than 60 inches; Westmoreland—40 to 60 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Poplimento—high; Westmoreland—low
Runoff class: Medium
Surface fragments: None
Parent material: Residuum weathered from limestone and shale

Use and Management Considerations

Cropland

Suitability: Well suited to grass-legume hay; moderately suited to corn and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Well suited to northern red oak; moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks is reduced.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Shrinking and swelling of the soil may crack foundations and basement walls.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: Poplimento—M; Westmoreland—U
Hydric soils: No

45F—Ramsey-Rock outcrop complex, 35 to 70 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Mountains on uplands
Position on the landform: Ramsey—backslopes and, in some areas, summits and shoulders; Rock outcrop—in areas scattered throughout the map unit and as near-vertical cliffs in some areas
Size of areas: 25 to 2,000 acres

Map Unit Composition

Note: This Ramsey soil and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Ramsey and similar soils: Typically 75 percent, ranging from about 70 to 80 percent
Rock outcrop: Typically 15 percent, ranging from about 10 to 20 percent

Typical Profile

Ramsey

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 5 inches—very dark grayish brown sandy loam

Subsurface layer:
5 to 9 inches—brown sandy loam

Subsoil:
9 to 17 inches—yellowish brown sandy loam

Hard bedrock:
17 inches—sandstone bedrock

Rock outcrop

This part of the map unit consists of outcrops of sandstone bedrock. Outcrops range from a few inches to 50 feet in height and can occur as near-vertical cliffs.

Minor Components

Dissimilar components:
- Gilpin soils, which are moderately deep to bedrock and have less sand than the Ramsey soil; in similar landform positions
- Oriskany soils, which are very deep to bedrock and have more rock fragments in the soil and on the surface than the Ramsey soil; on footslopes

Similar components:
- Wallen soils, which are moderately deep to sandstone bedrock and have more rock fragments in the soil than the Ramsey soil; in similar landform positions
- Lily soils, which are moderately deep to sandstone bedrock and have more clay than the Ramsey soil; in similar landform positions
- Soils that have more rock fragments in the soil than the Ramsey soil and are shallow to sandstone bedrock; in similar landform positions

Properties and Qualities of the Ramsey Soil

Available water capacity: Very low (about 1.5 inches)
Slowest saturated hydraulic conductivity: High (about 5.95 in/hr)
Depth class: Shallow (10 to 20 inches)
Depth to root-restrictive feature: 10 to 20 inches to bedrock (lithic)
Drainage class: Somewhat excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: None
Parent material: Loamy residuum weathered from sandstone

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pastureland.

Woodland

Suitability: Moderately suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.

- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Ramsey—7s; Rock outcrop—8s
Virginia soil management group: Ramsey—JJ; Rock outcrop—none assigned
Hydric soils: No

46F—Rock outcrop-Beech Grove-Benthole complex, 55 to 100 percent slopes, extremely bouldery

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and in valleys
Position on the landform: Rock outcrop—near-vertical cliffs; Beech Grove—backslopes and ledges of cliffs with slopes ranging from 55 to 100 percent; Benthole—footslopes downslope of cliffs with slopes ranging from 60 to 90 percent; areas of this map unit occur along rivers and streams
Size of areas: 5 to 25 acres

Map Unit Composition

Note: These Beech Grove and Benthole soils and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Rock outcrop: Typically 45 percent, ranging from about 40 to 50 percent
Beech Grove and similar soils: Typically 25 percent, ranging from about 20 to 30 percent
Benthole and similar soils: Typically 25 percent, ranging from about 20 to 30 percent

Typical Profile

Rock outcrop

This part of the map unit consists of outcrops of grayish hard limestone bedrock. Outcrops are near-vertical cliffs.

Beech Grove

Surface layer:
0 to 4 inches—very dark grayish brown channery silt loam

Hard bedrock:
4 inches—limestone bedrock

Benthole

Organic layer:
0 to 1 inch—moderately decomposed plant material

Surface layer:
1 to 3 inches—very dark grayish brown gravelly silt loam

Subsoil:
3 to 20 inches—brown very cobbly silty clay loam
20 to 37 inches—yellowish brown very cobbly silty clay loam
37 to 63 inches—dark yellowish brown very cobbly silty clay loam

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to limestone bedrock and have more clay than the Beech Grove and Benthole soils; in landform positions similar to those of the Beech Grove soil

Similar components:
- Areas that have fewer rock fragments on the surface than the Benthole soil; on similar landforms

Properties and Qualities of the Beech Grove and Benthole Soils

Available water capacity: Beech Grove—very low (about 0.5 inch); Benthole—moderate (about 6.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Beech Grove—very shallow (less than 10 inches); Benthole—very deep (more than 60 inches)
Depth to root-restrictive feature: Beech Grove—1 to 8 inches to bedrock (lithic); Benthole—more than 60 inches
Drainage class: Beech Grove—excessively drained; Benthole—well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Beech Grove—very high; Benthole—high
Surface fragments: Beech Grove—about 0.05 to 1.00 percent subangular channers and about 0.05 to 1.00 percent subangular flagstones; Benthole—about 4.00 to 10.00 percent subangular boulders and about 1.00 to 2.00 percent subangular stones
Parent material: Beech Grove—loamy residuum weathered from limestone; Benthole—stony, loamy colluvium derived from limestone

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pastureland.

Woodland

- Because of the proximity to steep bluffs, areas of this map unit are not recommended for conventional timber management.

Building sites

- Because of the proximity to steep river bluffs, areas of this map unit are not recommended for building sites.

Septic tank absorption fields

- Because of the proximity to steep river bluffs, areas of this map unit are not recommended for septic tank absorption fields.

Local roads and streets

- Because of the proximity to steep river bluffs, areas of this map unit are not recommended for local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Rock outcrop—8s; Beech Grove and Benthole—7s
Virginia soil management group: Rock outcrop—none assigned; Beech Grove—JJ; Benthole—CC
Hydric soils: No

47F—Sewell-Kaymine-Rock outcrop complex, 0 to 80 percent slopes, extremely stony

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Ridges and spurs of mountains that have been surface mined for coal
Position on the landform: Summits, shoulders, surface-mine benches, and surface-mine outslopes; some areas on footslopes and backslopes; rock outcrops occurring as exposed highwalls which have multiple sequences of outslopes, benches, and highwalls, each of which is parallel to each other and occur on contour (fig. 10)
Size of areas: 10 to 500 acres
Note: Areas of this map unit have been surface mined for coal

Map Unit Composition

Note: These Sewell and Kaymine soils and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Sewell and similar soils: Typically 55 percent, ranging from about 50 to 60 percent

Figure 10.—A typical area of Sewell-Kaymine-Rock outcrop complex, 0 to 80 percent slopes, extremely stony.

Kaymine and similar soils: Typically 30 percent, ranging from about 25 to 35 percent
Rock outcrop: Typically 10 percent, ranging from about 5 to 15 percent

Typical Profile

Sewell

Surface layer:
0 to 4 inches—yellowish brown channery sandy loam

Substratum:
4 to 9 inches—dark yellowish brown very channery sandy loam; common gray, common yellow, and common red mottles
9 to 29 inches—yellowish brown extremely channery sandy loam; common gray, common yellow, and common red mottles
29 to 65 inches—yellowish brown extremely channery sandy loam; common gray, common yellow, and common red mottles

Kaymine

Surface layer:
0 to 4 inches—dark grayish brown very channery silt loam

Substratum:
4 to 28 inches—dark brown extremely channery silt loam; common dark grayish brown and common yellowish brown mottles
28 to 64 inches—dark brown very flaggy silt loam; common dark grayish brown and common yellowish brown mottles

Rock outcrop

This part of the map unit occurs as near-vertical highwalls. It consists of exposed interbedded layers of sandstone, shale, and siltstone and thin seams of unmined coal.

Minor Components

Similar components:
- Cedarcreek soils, which formed in mine spoil derived from sandstone, siltstone, shale, and coal, are more acidic in reaction than the Kaymine soil, and have more clay and silt and less sand than the Sewell soil; on similar landforms
- Fiveblock soils, which formed in mine spoil derived mainly from sandstone, are less acid in reaction than the Sewell soil, and have more sand and less silt and clay than the Kaymine soil; on similar landforms

Dissimilar components:
- Soils that formed in mine spoil and are somewhat poorly drained; in depressions on benches and near the base of highwalls

Properties and Qualities of the Sewell and Kaymine Soils

Available water capacity: Sewell—very low (about 2.7 inches); Kaymine—moderate (about 6.8 inches)
Slowest saturated hydraulic conductivity: Sewell—high (about 1.98 in/hr); Kaymine—moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Sewell—somewhat excessively drained; Kaymine—well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Sewell—medium; Kaymine—high
Surface fragments: About 2.50 to 8.50 percent subangular stones and about 0.50 to 1.50 percent subangular boulders
Parent material: Sewell—mine spoil or earthy fill derived from sandstone and small amounts of siltstone, shale, and coal; Kaymine—mine spoil or earthy fill derived from shale, siltstone, sandstone, and coal

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pastureland.

Woodland

Suitability: Well suited to northern red oak, yellow-poplar, and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The high content of stones or boulders on the surface may hinder the construction of haul roads and log landings.
- The amount of rock fragments on the surface may reduce the traction of wheeled harvest equipment.

- Rock fragments on the surface interfere with the use of site preparation equipment.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Sewell and Kaymine—7s; Rock outcrop—8s
Virginia soil management group: Sewell and Kaymine—JJ; Rock outcrop—none assigned
Hydric soils: No

48E—Shelocta-Cedarcreek complex, 35 to 55 percent slopes, very bouldery

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Outslopes on ridges and spurs of mountains and hills that have been surface mined for coal; the areas are downslope of a surface-mine bench
Position on the landform: Backslopes and footslopes
Size of areas: 10 to 150 acres
Note: This map unit contains native undisturbed soil material and overburden material from surface-mining operations. These areas are downslope of a surface-mine bench. During surface-mining for coal, overburden was extracted from the area above a coal seam and deposited downslope of the operation. Some of these areas that are downslope of the surface-mine bench are covered with overburden; others remain uncovered. Shelocta soils occur in the areas without a deposit of overburden. Cedarcreek soils formed in the deposited overburden material.

Map Unit Composition

Note: These Shelocta and Cedarcreek soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Shelocta and similar soils: Typically 70 percent, ranging from about 60 to 80 percent
Cedarcreek and similar soils: Typically 25 percent, ranging from about 20 to 35 percent

Typical Profile

Shelocta

(This pedon is representative of the Shelocta soils in the northern part of Russell County and differs from the pedon described in the section "Soil Series and Their Morphology." This representative pedon is located in Buchanan County, Virginia.)

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 4 inches—dark grayish brown gravelly loam

Subsoil:
4 to 13 inches—yellowish brown loam
13 to 30 inches—strong brown gravelly silt loam; common dark yellowish brown mottles
30 to 50 inches—strong brown gravelly loam; common yellowish red mottles
50 to 62 inches—strong brown very gravelly loam; common yellowish brown mottles

Substratum:
62 to 86 inches—yellowish brown extremely gravelly loam; pale brown iron depletions and strong brown masses of oxidized iron

Cedarcreek

Surface layer:
0 to 3 inches—very dark gray very channery loam

Substratum:
3 to 15 inches—olive brown very channery loam; common gray, common yellow, and common brown mottles
15 to 65 inches—dark olive gray extremely channery loam; common brown, common yellow, and common gray mottles

Minor Components

Similar components:
- Highsplint soils, which are very deep to bedrock, have more rock fragments than the Shelocta soil, and formed in colluvium; on similar landforms
- Kaymine soils, which formed in mine spoil and are less acid in reaction than the Cedarcreek soil; on similar landforms
- Sewell soils, which have more sand and less clay than the Cedarcreek soil and formed in mine spoil; on similar landforms

Dissimilar components:
- Gilpin soils, which formed in shale and are moderately deep to bedrock; on landforms similar to those of the Shelocta and Cedarcreek soils

Soil Properties and Qualities

Available water capacity: Shelocta—moderate (about 7.4 inches); Cedarcreek—low (about 3.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None

Shrink-swell potential: Low
Runoff class: High
Surface fragments: About 0.10 to less than 3.00 percent subangular boulders
Parent material: Shelocta—colluvium derived from sandstone and shale; Cedarcreek—mine spoil or earthy fill derived from shale, siltstone, sandstone, and coal
Distinctive soil property: The Cedarcreek soil in this map unit is subject to differential settling

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Well suited to northern red oak and chestnut oak; moderately suited to yellow-poplar

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The high content of stones or boulders on the surface may hinder the construction of haul roads and log landings.
- The amount of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.
- The low soil strength interferes with the construction of haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of differential settling, the Cedarcreek soil is not recommended for building site development.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.
- Because of differential settling, the Cedarcreek soil is not recommended for septic tank absorption fields.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.
- Differential settling in areas of the Cedarcreek soil may damage local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: Shelocta—L; Cedarcreek—JJ
Hydric soils: No

49E—Shelocta-Highsplint complex, 35 to 55 percent slopes, very stony

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Ridges and spurs of mountains and hills and drainageways
Position on the landform: Backslopes and footslopes, on slopes that face in a southward to westward direction
Size of areas: 5 to 250 acres

Map Unit Composition

Note: These Shelocta and Highsplint soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Shelocta and similar soils: Typically 50 percent, ranging from about 45 to 55 percent
Highsplint and similar soils: Typically 40 percent, ranging from about 35 to 55 percent

Typical Profile

Shelocta

(This pedon is representative of the Shelocta soils in the northern part of Russell County and differs from the pedon described in the section "Soil Series and Their Morphology." This representative pedon is located in Buchanan County, Virginia.)

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 4 inches—dark grayish brown gravelly loam

Subsoil:
4 to 13 inches—yellowish brown loam
13 to 30 inches—strong brown gravelly silt loam; common dark yellowish brown mottles
30 to 50 inches—strong brown gravelly loam; common yellowish red mottles
50 to 62 inches—strong brown very gravelly loam; common yellowish brown mottles

Substratum:
62 to 86 inches—yellowish brown extremely gravelly loam; pale brown iron depletions and strong brown masses of oxidized iron

Highsplint

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 3 inches—brown channery silt loam

Subsoil:
3 to 19 inches—dark yellowish brown channery silt loam
19 to 38 inches—dark yellowish brown very channery silt loam; many brown mottles
38 to 59 inches—yellowish brown very flaggy silt loam; many brown mottles

Substratum:
59 to 82 inches—yellowish brown very channery loam; common strong brown and many dark brown mottles

Minor Components

Similar components:
- Soils that formed in colluvium from sandstone, siltstone, and shale and have a thick dark surface horizon; on north- and east-facing slopes
- Soils that have fewer rock fragments than the Highsplint soil and have less clay than the Shelocta soil; on similar landforms
- Soils that have more rock fragments than the Shelocta soil and have less clay than Highsplint soil; on similar landforms

Dissimilar components:
- Soils that formed from sediments of sandstone and quartzite, have fewer rock fragments than the Highsplint soil, and are shallow to bedrock; on similar landforms
- Soils that formed from sediments of sandstone or quartzite, have more rock fragments than the Shelocta soil, and are shallow to bedrock; on similar landforms
- Berks and Gilpin soils, which formed in shale residuum and are moderately deep to bedrock; on backsopes
- Marrowbone soils, which formed in sandstone residuum and are moderately deep to bedrock; on backslopes
- Moderately deep soils that formed in colluvium; in areas scattered throughout the map unit but mostly on nose slopes and in convex areas
- Somewhat poorly drained soils in drainageways

Soil Properties and Qualities

Available water capacity: Moderate (about 7.4 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: About 0.10 to less than 3.00 percent subrounded stones
Parent material: Colluvium derived from sandstone and shale

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Well suited to northern red oak and chestnut oak; moderately suited to yellow-poplar

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.
- The low soil strength interferes with the construction of haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: Shelocta—L; Highsplint—CC
Hydric soils: No

50F—Shelocta-Kaymine complex, 55 to 80 percent slopes, very bouldery

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Outslopes on ridges and spurs of mountains and hills that have been surface mined for coal; these areas are downslope of a surface-mine bench
Position on the landform: Backslopes and footslopes
Size of areas: 10 to 250 acres
Note: This map unit contains native undisturbed soil material and overburden material from surface-mining operations. These areas are downslope of a surface-mine bench. During surface-mining for coal, overburden was extracted from the area above a coal seam and deposited downslope of the operation. Some of these areas that are downslope of the surface-mine bench are covered with overburden, others remain uncovered. The Shelocta soil occurs in the areas without a deposit of overburden. The Cedarcreek soil formed in the deposited overburden material.

Map Unit Composition

Note: These Shelocta and Kaymine soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Shelocta and similar soils: Typically 55 percent, ranging from about 40 to 65 percent
Kaymine and similar soils: Typically 40 percent, ranging from about 35 to 50 percent

Typical Profile

Shelocta

(This pedon is representative of the Shelocta soils in the northern part of Russell County and differs from the pedon described in the section "Soil Series and Their Morphology." This representative pedon is located in Buchanan County, Virginia.)

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 4 inches—dark grayish brown gravelly loam

Subsoil:
4 to 13 inches—yellowish brown loam
13 to 30 inches—strong brown gravelly silt loam; common dark yellowish brown mottles
30 to 50 inches—strong brown gravelly loam; common yellowish red mottles
50 to 62 inches—strong brown very gravelly loam; common yellowish brown mottles

Substratum:
62 to 86 inches—yellowish brown extremely gravelly loam; pale brown iron depletions and strong brown masses of oxidized iron

Kaymine

Surface layer:
0 to 4 inches—dark grayish brown very channery silt loam

Substratum:
4 to 28 inches—dark brown extremely channery silt loam; common dark grayish brown and common yellowish brown mottles
28 to 64 inches—dark brown very flaggy silt loam; common dark grayish brown and common yellowish brown mottles

Minor Components

Similar components:
- Highsplint soils, which are very deep to bedrock, have more rock fragments than the Shelocta soil, and formed in colluvium; on similar landforms
- Cedarcreek soils, which formed in mine spoil and are more acid in reaction than the Kaymine soil; on similar landforms
- Fiveblock soils, which have more sand and less clay than the Kaymine soil and formed in mine spoil; on similar landforms

Dissimilar components:
- Berks soils, which formed in shale and are moderately deep to bedrock; on landforms similar to those of the Shelocta and Kaymine soils

Soil Properties and Qualities

Available water capacity: Shelocta—moderate (about 7.4 inches); Kaymine—moderate (about 6.8 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)

Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: About 0.10 to less than 3.00 percent subangular boulders
Parent material: Shelocta—colluvium derived from sandstone and shale; Kaymine—mine spoil or earthy fill derived from shale, siltstone, sandstone, and coal
Distinctive soil property: The Kaymine soil in this map unit is subject to differential settling

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pastureland.

Woodland

Suitability: Well suited to northern red oak and chestnut oak; moderately suited to yellow-poplar

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The high content of stones or boulders on the surface may hinder the construction of haul roads and log landings.
- The amount of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.
- The low soil strength interferes with the construction of haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of differential settling, the Kaymine soil is not recommended for building site development.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.
- Because of differential settling, the Kaymine soil is not recommended for septic tank absorption fields.

Figure 11.—A typical area of Stonecoal extremely channery sandy loam, 0 to 80 percent slopes.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.
- Differential settling in areas of the Kaymine soil may damage local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: Shelocta—L; Kaymine—JJ
Hydric soils: No

51F—Stonecoal extremely channery sandy loam, 0 to 80 percent slopes

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Coal-mine refuse piles on mountains and hills and in areas of valley fill close to abandoned and active coal mines (fig. 11)
Position on the landform: Summits, shoulders, backslopes, footslopes, drainageways, and areas around coal-cleaning plants
Size of areas: 50 to 600 acres or more
Note: Areas of this map unit are refuse piles that are derived from the processing of deep-mined coal. Many areas are active waste-dumping sites, some of which have been covered with a few inches of natural soil material during reclamation. A few areas of valley fill have impounded water behind them.

Map Unit Composition

Stonecoal and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Substratum:
0 to 39 inches—black extremely channery sandy loam
39 to 68 inches—black extremely channery loamy sand

Minor Components

Dissimilar components:
- Areas of water
- Refuse materials from coal-cleaning processes that have textures and composition of fragments similar to the Stonecoal soil and are acid in reaction

Soil Properties and Qualities

Available water capacity: Very low (about 1.2 inches)
Slowest saturated hydraulic conductivity: High (about 1.98 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Somewhat excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: None
Parent material: Nonacid regolith of waste materials from deep-mined coal, a mixture of partially weathered fine earth and fragments of bedrock which consist of nonacid carboliths, sandstone, siltstone, and shale
Distinctive soil property: The Stonecoal soil in this map unit is subject to differential settling

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.

- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.

Building sites

- Because of differential settling, this soil is not recommended for building site development.

Septic tank absorption fields

- Because of differential settling, this soil is not recommended for septic tank absorption fields.

Local roads and streets

- Differential settling of the soil may damage local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: JJ
Hydric soil: No

52C—Tumbling loam, 8 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and mountains and valleys
Position on the landform: Footslopes and toeslopes
Size of areas: 5 to 50 acres

Map Unit Composition

Tumbling and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Surface layer:
0 to 6 inches—brown loam

Subsoil:
6 to 19 inches—strong brown clay loam
19 to 47 inches—yellowish red clay
47 to 65 inches—red cobbly clay

Minor Components

Dissimilar components:
- Westmoreland and Gilpin soils, which are deep and moderately deep to bedrock, respectively, and have less clay than the Tumbling soil; on uplands
- Berks and Wallen soils, which have more rock fragments and less clay than the Tumbling soil and are moderately deep to bedrock; on uplands
- Carbo soils, which are moderately deep to bedrock; on uplands
- Soils that are moderately well drained and have less clay than the Tumbling soil; in similar landform positions
- Oriskany soils, which have more rock fragments in the soil and on the surface than the Tumbling soil and have less clay; in similar landform positions

Similar components:
- Soils that have less clay in the subsoil than the Tumbling soil; in similar landform positions
- Areas that have slightly more rock fragments on the surface than the Tumbling soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Moderate (about 8.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: None
Parent material: Clayey colluvium derived from sandstone and shale

Use and Management Considerations

Cropland

Suitability: Well suited to grass-legume hay; moderately suited to corn and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks is reduced.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: O
Hydric soil: No

52D—Tumbling loam, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and mountains and valleys
Position on the landform: Footslopes
Size of areas: 5 to 75 acres

Map Unit Composition

Tumbling and similar soils: Typically 80 percent, ranging from about 75 to 85 percent

Typical Profile

Surface layer:
0 to 6 inches—brown loam

Subsoil:
6 to 19 inches—strong brown clay loam
19 to 47 inches—yellowish red clay
47 to 65 inches—red cobbly clay

Minor Components

Dissimilar components:
- Westmoreland and Gilpin soils, which are deep and moderately deep to bedrock, respectively, and have less clay than the Tumbling soil; on uplands
- Berks and Wallen soils, which have more rock fragments and less clay than the Tumbling soil and are moderately deep to bedrock; on uplands
- Carbo soils, which are moderately deep to bedrock; on uplands
- Soils that are moderately well drained and have less clay than the Tumbling soil; in similar landform positions
- Oriskany soils, which have more rock fragments in the soil and on the surface than the Tumbling soil and have less clay; in similar landform positions

Similar components:
- Soils that have less clay in the subsoil than the Tumbling soil; in similar landform positions
- Areas that have slightly more rock fragments on the surface layer than the Tumbling soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Moderate (about 8.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches

Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Clayey colluvium derived from sandstone and shale

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: O
Hydric soil: No

53E—Tumbling loam, 25 to 45 percent slopes, very stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and mountains and hills and mountains
Position on the landform: Footslopes and lower backslopes
Size of areas: 25 to 350 acres

Map Unit Composition

Tumbling and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Surface layer:
0 to 6 inches—brown loam

Subsoil:
6 to 19 inches—strong brown clay loam
19 to 47 inches—yellowish red clay
47 to 65 inches—red cobbly clay

Minor Components

Dissimilar components:
- Westmoreland and Gilpin soils, which are deep and moderately deep to bedrock, respectively, and have less clay than the Tumbling soil; on uplands
- Berks and Wallen soils, which have more rock fragments and less clay than the Tumbling soil and are moderately deep to bedrock; on uplands
- Carbo soils, which are moderately deep to bedrock; on uplands
- Soils that are moderately well drained and have less clay than the Tumbling soil; in similar landform positions
- Oriskany soils, which have more rock fragments in the soil and on the surface than the Tumbling soil and have less clay; in similar landform positions

Similar components:
- Soils that have less clay in the subsoil than the Tumbling soil; in similar landform positions
- Areas that have either slightly more or slightly fewer rock fragments on the surface than the Tumbling soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Moderate (about 8.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: About 0.10 to less than 3.00 percent rounded stones
Parent material: Clayey colluvium derived from sandstone and shale

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: O
Hydric soil: No

54F—Udorthents-Urban land complex, 0 to 80 percent slopes

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125) and Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Cut and fill areas, towns, highways, housing developments, shopping centers, or other manmade areas, excluding surface mines and gravel quarries (fig. 12)
Position on the landform: Variable
Size of areas: 5 to 100 acres

Figure 12.—A typical area of Udorthents-Urban land complex, 0 to 80 percent slopes.

Map Unit Composition

Note: These Udorthents and Urban land occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Udorthents: Typically 45 percent, ranging from about 35 to 55 percent
Urban land: Typically 30 percent, ranging from about 15 to 45 percent

Typical Profile

Udorthents

This part of the map unit consists of soil material that has been altered by humans. Udorthents formed when soils were disturbed by land-leveling, excavation, or filling. They consist of material of variable texture and color with varying amounts of rock fragments. Depth to hard bedrock varies from a few inches to more than 5 feet. Areas range from slightly compacted to severely compacted. Drainage is variable. Unvegetated areas are susceptible to severe erosion. Because of the variability of the material, a typical profile is not given.

Urban land

This part of the map unit is covered by highways, streets, parking lots, and buildings, or other impervious material or structures.

Use and Management Considerations

- Onsite investigation is needed to determine the suitability of any area for specific uses.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: None assigned
Virginia soil management group: None assigned
Hydric soils: No

55D—Wallen channery sandy loam, 15 to 35 percent slopes, very stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Mountains on uplands
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 10 to 250 acres

Map Unit Composition

Wallen and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 4 inches—very dark brown channery sandy loam

Subsoil:
4 to 22 inches—yellowish brown very channery sandy loam

Substratum:
22 to 24 inches—yellowish brown and strong brown extremely channery sandy loam

Hard bedrock:
24 inches—sandstone bedrock

Minor Components

Dissimilar components:
- Oriskany soils, which are very deep and formed in colluvium with many rock fragments; in drainageways
- Areas of rock outcrops in areas scattered throughout the map unit

Similar components:
- Areas of Wallen channery loam; in areas scattered throughout the map unit
- Areas of Wallen sandy loam; in areas scattered throughout the map unit
- Calvin soils, which formed in shale and have more silt and less sand and are redder than the Wallen soil; in the lower areas
- Areas of residual soils that are shallow to bedrock; in areas scattered throughout the map unit
- Areas of residual soils that are deep to bedrock; in areas scattered throughout the map unit

Soil Properties and Qualities

Available water capacity: Very low (about 2.0 inches)
Slowest saturated hydraulic conductivity: High (about 1.98 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Somewhat excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: About 0.10 to less than 3.00 percent angular stones
Parent material: Residuum weathered from acid sandstone interbedded with shale and siltstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The use of mechanical planting equipment is impractical because of the slope.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: JJ
Hydric soil: No

55F—Wallen channery sandy loam, 35 to 70 percent slopes, very stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Mountains on uplands
Position on the landform: Shoulders and backslopes
Size of areas: 5 to 60 acres

Map Unit Composition

Wallen and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 4 inches—very dark brown channery sandy loam

Subsoil:
4 to 22 inches—yellowish brown very channery sandy loam

Substratum:
22 to 24 inches—yellowish brown and strong brown extremely channery sandy loam

Hard bedrock:
24 inches—sandstone bedrock

Minor Components

Dissimilar components:
- Oriskany soils, which are very deep and formed in colluvium with many rock fragments; in drainageways
- Areas of rock outcrops in areas scattered throughout the map unit

Similar components:
- Areas of Wallen channery loam; in areas scattered throughout the map unit
- Areas of Wallen sandy loam; in areas scattered throughout the map unit
- Calvin soils, which formed in shale and have more silt and less sand and are redder than the Wallen soil; in the lower areas
- Areas of residual soils that are shallow to bedrock; in areas scattered throughout the map unit
- Areas of residual soils that are deep to bedrock; in areas scattered throughout the map unit

Soil Properties and Qualities

Available water capacity: Very low (about 2.0 inches)
Slowest saturated hydraulic conductivity: High (about 1.98 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Somewhat excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: About 0.10 to less than 3.00 percent angular stones
Parent material: Residuum weathered from acid sandstone interbedded with shale and siltstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: JJ
Hydric soil: No

56D—Wallen-Rock outcrop complex, 15 to 35 percent slopes, extremely stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Mountains on uplands; in some areas rock outcrops are near-vertical cliffs
Position on the landform: Summits and shoulders
Size of areas: 5 to 100 acres

Map Unit Composition

Note: This Wallen soil and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Wallen and similar soils: Typically 65 percent, ranging from about 60 to 70 percent
Rock outcrop: Typically 25 percent, ranging from about 20 to 30 percent

Typical Profile

Wallen

Surface layer:
0 to 4 inches—very dark brown channery sandy loam

Subsoil:
4 to 22 inches—yellowish brown very channery sandy loam

Substratum:
22 to 24 inches—yellowish brown and strong brown extremely channery sandy loam

Hard bedrock:
24 inches—sandstone bedrock

Rock outcrop

This part of the map unit consists of outcrops of hard sandstone.

Minor Components

Dissimilar components:
- Oriskany soils, which are very deep and formed in colluvium with many rock fragments; in drainageways

Similar components:
- Areas of Wallen channery loam; in areas scattered throughout the map unit
- Areas of Wallen sandy loam; in areas scattered throughout the map unit
- Calvin soils, which formed in shale, have more silt and less sand than the Wallen soil, and are redder; in the lower areas of the map unit
- Areas of residual soils that are shallow to bedrock; in areas scattered throughout the map unit
- Areas of residual soils that are deep to bedrock; in areas scattered throughout the map unit

Properties and Qualities of the Wallen Soil

Available water capacity: Very low (about 2.0 inches)
Slowest saturated hydraulic conductivity: High (about 1.98 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Somewhat excessively drained
Depth to seasonal water saturation: More than 6 feet

Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: About 3.00 to less than 15.00 percent angular stones
Parent material: Residuum weathered from acid sandstone interbedded with shale and siltstone

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pastureland.

Woodland

Suitability: Moderately suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The use of mechanical planting equipment is impractical because of the slope.
- The high content of stones or boulders on the surface may hinder the construction of haul roads and log landings.
- The amount of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Wallen—7s; Rock outcrop—8s
Virginia soil management group: Wallen—JJ; Rock outcrop—none assigned
Hydric soils: No

56F—Wallen-Rock outcrop complex, 35 to 80 percent slopes, extremely stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Mountains on uplands; in some areas rock outcrops are near-vertical cliffs
Position on the landform: Backslopes
Size of areas: 5 to 200 acres

Map Unit Composition

Note: This Wallen soil and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Wallen and similar soils: Typically 65 percent, ranging from about 60 to 70 percent
Rock outcrop: Typically 25 percent, ranging from about 20 to 30 percent

Typical Profile

Wallen

Surface layer:
0 to 4 inches—very dark brown channery sandy loam

Subsoil:
4 to 22 inches—yellowish brown very channery sandy loam

Substratum:
22 to 24 inches—yellowish brown and strong brown extremely channery sandy loam

Hard bedrock:
24 inches—sandstone bedrock

Rock outcrop

This part of the map unit consists of outcrops of hard sandstone.

Minor Components

Dissimilar components:
- Oriskany soils, which are very deep and formed in colluvium with many rock fragments; in drainageways

Similar components:
- Areas of Wallen channery loam; in areas scattered throughout the map unit
- Areas of Wallen sandy loam; in areas scattered throughout the map unit

- Calvin soils, which formed in shale, have more silt and less sand than the Wallen soil, and are redder; in the lower areas
- Areas of residual soils that are shallow to bedrock; in areas scattered throughout the map unit
- Areas of residual soils that are deep to bedrock; in areas scattered throughout the map unit

Properties and Qualities of the Wallen Soil

Available water capacity: Very low (about 2.0 inches)
Slowest saturated hydraulic conductivity: High (about 1.98 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Somewhat excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: About 3.00 to less than 15.00 percent angular stones
Parent material: Residuum weathered from acid sandstone interbedded with shale and siltstone

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pastureland.

Woodland

Suitability: Moderately suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The high content of stones or boulders on the surface may hinder the construction of haul roads and log landings.
- The amount of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The proper treatment of effluent from conventional septic systems is limited by the slope.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Wallen—7s; Rock outcrop—8s
Virginia soil management group: Wallen—JJ; Rock outcrop—none assigned
Hydric soils: No

57C—Watahala gravelly silt loam, 8 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Summits and shoulders
Size of areas: 5 to 80 acres

Map Unit Composition

Watahala and similar soils: Typically 95 percent, ranging from about 90 to 98 percent

Typical Profile

Surface layer:
0 to 4 inches—very dark grayish brown gravelly silt loam

Subsurface layer:
4 to 15 inches—yellowish brown gravelly silt loam

Subsoil:
15 to 28 inches—yellowish brown very gravelly loam
28 to 42 inches—strong brown gravelly silty clay loam; common yellowish red mottles
42 to 60 inches—yellowish red silty clay; common strong brown mottles

Minor Components

Dissimilar components:

- Carbo soils, which are moderately deep to bedrock and have fewer rock fragments in the soil than the Watahala soil; in similar landform positions

- Marbie soils, which are moderately well drained and have fewer rock fragments in the soil than the Watahala soil; on footslopes
- Soils which are moderately deep or shallow to bedrock; in landform positions similar to those of the Watahala soil

Similar components:
- Wyrick soils, which have fewer rock fragments in the soil than the Watahala soil; on footslopes
- Soils that have fewer rock fragments in the soil than the Watahala soil; in similar landform positions
- Frederick soils, which have more clay and fewer rock fragments in the subsoil than the Watahala soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Low (about 4.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.20 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: 20 to 50 inches to strongly contrasting textural stratification
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: About 0.00 to 1.00 percent angular cobbles and about 0.50 to 3.00 percent coarse angular gravel
Parent material: Gravelly residuum over clayey residuum weathered from cherty limestone

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- Because of the limited available water capacity, plants may suffer from moisture stress.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks is reduced.
- The slope may restrict the use of some mechanical planting equipment.

- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- This soil is well suited to haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: M
Hydric soil: No

57D—Watahala gravelly silt loam, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 5 to 150 acres

Map Unit Composition

Watahala and similar soils: Typically 95 percent, ranging from about 90 to 98 percent

Typical Profile

Surface layer:
0 to 4 inches—very dark grayish brown gravelly silt loam

Subsurface layer:
4 to 15 inches—yellowish brown gravelly silt loam

Subsoil:
15 to 28 inches—yellowish brown very gravelly loam
28 to 42 inches—strong brown gravelly silty clay loam; common yellowish red mottles
42 to 60 inches—yellowish red silty clay; common strong brown mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to bedrock and have fewer rock fragments in the soil than the Watahala soil; in similar landform positions
- Marbie soils, which are moderately well drained and have fewer rock fragments in the soil than the Watahala soil; on footslopes

- Soils that are moderately deep or shallow to bedrock; in landform positions similar to those of the Watahala soil

Similar components:
- Wyrick soils, which have fewer rock fragments in the soil than the Watahala soil; on footslopes
- Soils that have fewer rock fragments in the soil than the Watahala soil; in similar landform positions
- Frederick soils, which have more clay and fewer rock fragments in the subsoil than the Watahala soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Low (about 4.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.20 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: 20 to 50 inches to strongly contrasting textural stratification
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: About 0.00 to 1.00 percent angular cobbles and about 0.50 to 3.00 percent coarse angular gravel
Parent material: Gravelly residuum over clayey residuum weathered from cherty limestone

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- Because of the limited available water capacity, plants may suffer from moisture stress.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.

- The slope may restrict the use of some mechanical planting equipment.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low soil strength interferes with the construction of haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: M
Hydric soil: No

57E—Watahala gravelly silt loam, 25 to 35 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Backslopes
Size of areas: 25 to 300 acres

Map Unit Composition

Watahala and similar soils: Typically 95 percent, ranging from about 90 to 98 percent

Typical Profile

Surface layer:
0 to 4 inches—very dark grayish brown gravelly silt loam

Subsurface layer:
4 to 15 inches—yellowish brown gravelly silt loam

Subsoil:
15 to 28 inches—yellowish brown very gravelly loam
28 to 42 inches—strong brown gravelly silty clay loam; common yellowish red mottles
42 to 60 inches—yellowish red silty clay; common strong brown mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to bedrock and have fewer rock fragments in the soil than the Watahala soil; in similar landform positions
- Marbie soils, which are moderately well drained and have fewer rock fragments in the soil than the Watahala soil; on footslopes

- Soils that are moderately deep or shallow to bedrock; in landform positions similar to those of the Watahala soil

Similar components:
- Wyrick soils, which have fewer rock fragments in the soil than the Watahala soil; on footslopes
- Soils that have fewer rock fragments in the soil than the Watahala soil; in similar landform positions
- Frederick soils, which have more clay and fewer rock fragments in the subsoil than the Watahala soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Low (about 4.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.20 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: 20 to 50 inches to strongly contrasting textural stratification
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: About 0.00 to 1.00 percent angular cobbles and about 0.50 to 3.00 percent coarse angular gravel
Parent material: Gravelly residuum over clayey residuum weathered from cherty limestone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The use of mechanical planting equipment is impractical because of the slope and the content of rock fragments.

- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low soil strength interferes with the construction of haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: M
Hydric soil: No

57F—Watahala gravelly silt loam, 35 to 55 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Backslopes
Size of areas: 25 to 300 acres

Map Unit Composition

Watahala and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Surface layer:
0 to 4 inches—very dark grayish brown gravelly silt loam

Subsurface layer:
4 to 15 inches—yellowish brown gravelly silt loam

Subsoil:
15 to 28 inches—yellowish brown very gravelly loam
28 to 42 inches—strong brown gravelly silty clay loam; common yellowish red mottles
42 to 60 inches—yellowish red silty clay; common strong brown mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to bedrock and have fewer rock fragments in the soil than the Watahala soil; in similar landform positions
- Marbie soils, which are moderately well drained and have fewer rock fragments in the soil than the Watahala soil; on footslopes
- Soils that are moderately deep or shallow to bedrock; in landform positions similar to those of the Watahala soil

Similar components:
- Wyrick soils, which have fewer rock fragments in the soil than the Watahala soil; on footslopes
- Soils that have fewer rock fragments in the soil than the Watahala soil; in similar landform positions
- Frederick soils, which have more clay and fewer rock fragments in the subsoil than the Watahala soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Low (about 4.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.20 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: 20 to 50 inches to strongly contrasting textural stratification
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: About 0.00 to 1.00 percent angular cobbles and about 0.50 to 3.00 percent coarse angular gravel
Parent material: Gravelly residuum over clayey residuum weathered from cherty limestone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The use of mechanical planting equipment is impractical because of the slope and the content of rock fragments.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low soil strength interferes with the construction of haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: M
Hydric soil: No

58D—Watahala gravelly silt loam, 15 to 25 percent slopes, extremely stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 5 to 150 acres

Map Unit Composition

Watahala and similar soils: Typically 95 percent, ranging from about 90 to 98 percent

Typical Profile

Surface layer:
0 to 4 inches—very dark grayish brown gravelly silt loam

Subsurface layer:
4 to 15 inches—yellowish brown gravelly silt loam

Subsoil:
15 to 28 inches—yellowish brown very gravelly loam
28 to 42 inches—strong brown gravelly silty clay loam; common yellowish red mottles
42 to 60 inches—yellowish red silty clay; common strong brown mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to bedrock and have fewer rock fragments in the soil than the Watahala soil; in similar landform positions
- Marbie soils, which are moderately well drained and have fewer rock fragments in the soil than the Watahala soil; on footslopes
- Soils that are moderately deep or shallow to bedrock; in landform positions similar to those of the Watahala soil

Similar components:
- Wyrick soils, which have fewer rock fragments in the soil than the Watahala soil; on footslopes
- Soils that have fewer rock fragments in the soil than the Watahala soil; in similar landform positions
- Frederick soils, which have more clay and fewer rock fragments in the subsoil than the Watahala soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Low (about 4.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.20 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: 20 to 50 inches to strongly contrasting textural stratification
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: About 3.00 to less than 15.00 percent subangular stones
Parent material: Gravelly residuum over clayey residuum weathered from cherty limestone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The high content of stones or boulders on the surface may hinder the construction of haul roads and log landings.
- The amount of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low soil strength interferes with the construction of haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: M
Hydric soil: No

58E—Watahala gravelly silt loam, 25 to 35 percent slopes, extremely stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills on uplands
Position on the landform: Backslopes
Size of areas: 25 to 300 acres

Map Unit Composition

Watahala and similar soils: Typically 95 percent, ranging from about 90 to 98 percent

Typical Profile

Surface layer:
0 to 4 inches—very dark grayish brown gravelly silt loam

Subsurface layer:
4 to 15 inches—yellowish brown gravelly silt loam

Subsoil:
15 to 28 inches—yellowish brown very gravelly loam
28 to 42 inches—strong brown gravelly silty clay loam; common yellowish red mottles
42 to 60 inches—yellowish red silty clay; common strong brown mottles

Minor Components

Dissimilar components:
- Carbo soils, which are moderately deep to bedrock and have fewer rock fragments in the soil than the Watahala soil; in similar landform positions
- Marbie soils, which are moderately well drained and have fewer rock fragments in the soil than the Watahala soil; on footslopes
- Soils that are moderately deep or shallow to bedrock; in landform positions similar to those of the Watahala soils

Similar components:
- Wyrick soils, which have fewer rock fragments in the soil than the Watahala soil; on footslopes
- Soils that have fewer rock fragments in the soil than the Watahala soil; in similar landform positions
- Frederick soils, which have more clay and fewer rock fragments in the subsoil than the Watahala soil; in similar landform positions

Soil Properties and Qualities

Available water capacity: Low (about 4.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.20 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: 20 to 50 inches to strongly contrasting textural stratification
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: About 3.00 to less than 15.00 percent subangular stones
Parent material: Gravelly residuum over clayey residuum weathered from cherty limestone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pastureland.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The use of mechanical planting equipment is impractical because of the slope and the content of rock fragments.
- The high content of stones or boulders on the surface may hinder the construction of haul roads and log landings.
- The amount of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low soil strength interferes with the construction of haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: M
Hydric soil: No

59D—Wharton-Gilpin-Berks complex, 15 to 25 percent slopes

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Ridges and spurs of mountains and hills
Position on the landform: Summits and shoulders
Size of areas: 5 to 75 acres

Map Unit Composition

Note: These Wharton, Gilpin, and Berks soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Wharton and similar soils: Typically 45 percent, ranging from about 40 to 50 percent
Gilpin and similar soils: Typically 40 percent, ranging from about 35 to 45 percent
Berks and similar soils: Typically 15 percent, ranging from about 10 to 25 percent

Typical Profile

Wharton

Surface layer:
0 to 2 inches—yellowish brown silt loam

Subsoil:
2 to 9 inches—yellowish brown silt loam; many dark yellowish brown mottles
9 to 17 inches—strong brown silty clay loam; many dark yellowish brown mottles
17 to 35 inches—light yellowish brown silty clay loam; light gray iron depletions and strong brown masses of oxidized iron
35 to 55 inches—yellowish brown silt loam; light gray iron depletions and strong brown masses of oxidized iron

Substratum:
55 to 65 inches—yellowish brown silt loam and silty clay loam; light gray iron depletions and yellowish red masses of oxidized iron

Hard bedrock:
65 inches—shale bedrock

Gilpin

(This pedon is representative of the Gilpin soils in the northern part of Russell County

and differs from the pedon described in the section "Soil Series and Their Morphology." This representative pedon is located in Buchanan County, Virginia.)

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 3 inches—brown silt loam

Subsoil:
3 to 5 inches—yellowish brown silt loam
5 to 19 inches—yellowish brown gravelly silt loam
19 to 30 inches—yellowish brown gravelly loam

Substratum:
30 to 35 inches—strong brown very gravelly loam

Soft bedrock:
35 to 39 inches—reddish brown, strong brown, and brown shale bedrock

Hard bedrock:
39 inches—shale bedrock

Berks

(This pedon is representative of the Berks soils in the northern part of Russell County and differs from the pedon described in the section "Soil Series and Their Morphology." This representative pedon is located in Buchanan County, Virginia.)

Organic layer:
0 to 1 inch—very dark brown slightly decomposed plant material

Surface layer:
1 to 4 inches—dark yellowish brown silt loam

Subsoil:
4 to 8 inches—yellowish brown channery silt loam
8 to 23 inches—yellowish brown very channery silt loam

Substratum:
23 to 34 inches—yellowish brown extremely channery silt loam

Soft bedrock:
34 to 36 inches—shale bedrock

Hard bedrock:
36 inches—shale bedrock

Minor Components

Similar components:
- Soils that are similar to the Wharton soil except that they have a thinner solum; on similar landforms
- Soils that are similar to the Wharton soil but have thin lenses of coal in the substratum; on similar landforms
- Soils that are moderately deep to shale bedrock and are moderately well drained; on landforms similar to those of the Wharton, Gilpin, and Berks soils
- Soils that are deep to shale bedrock and are well drained; on landforms similar to those of the Wharton, Gilpin, and Berks soils
- Soils that formed in residuum weathered from shale over a sandstone substratum; on landforms similar to those of the Wharton, Gilpin, and Berks soils

- Soils that have more sand than the Gilpin soil and are moderately deep and deep to bedrock; on similar landforms
- Matewan soils, which are moderately deep to sandstone bedrock and have more rock fragments in the soil than the Wharton and Gilpin soils; in the higher areas
- Shelocta soils, which are very deep and well drained colluvium and which have fewer rock fragments in the soil than the Gilpin soil; in the lower areas

Dissimilar components:
- Soils that formed in residuum weathered from shale, have textures similar to the Berks soil, and are very deep to bedrock; on similar landforms
- Soils that formed in residuum weathered from sandstone, have loamy textures, and are shallow to bedrock; on landforms similar to those of the Wharton, Gilpin, and Berks soils

Soil Properties and Qualities

Available water capacity: Wharton—high (about 10.3 inches); Gilpin—low (about 4.8 inches); Berks—low (about 3.5 inches)
Slowest saturated hydraulic conductivity: Wharton—moderately low (about 0.06 in/hr); Gilpin and Berks—moderately high (about 0.57 in/hr)
Depth class: Wharton—very deep (more than 60 inches); Gilpin and Berks—moderately deep (20 to 40 inches)
Depth to root-restrictive feature: Wharton—40 to 70 inches to bedrock (lithic); Gilpin and Berks—20 to 40 inches to bedrock (paralithic)
Drainage class: Wharton—moderately well drained; Gilpin and Berks—well drained
Depth to seasonal water saturation: Wharton—about 18 to 36 inches; Gilpin and Berks—more than 6 feet
Water table (kind): Wharton—perched; Gilpin and Berks—none
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Wharton—very high; Gilpin and Berks—high
Surface fragments: None
Parent material: Wharton—residuum weathered from shale and siltstone; Gilpin—residuum weathered from sandstone and some shale and siltstone; Berks—residuum weathered from acid shale interbedded with fine-grained sandstone and siltstone

Use and Management Considerations

Cropland

Suitability: Poorly suited to corn and grass-legume hay; not suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- Frost action may damage the root system of winter grain crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Frost action may damage the root systems of plants.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Soil wetness may limit the use of log trucks.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.
- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: Wharton—AA; Gilpin—U; Berks—JJ
Hydric soils: No

60C—Wharton-Gilpin-Marrowbone complex, 8 to 15 percent slopes

Setting

Major land resource area: Cumberland Plateau and Mountains (MLRA 125)
Landform: Ridges and spurs of mountains and hills
Position on the landform: Summits and shoulders
Size of areas: 5 to 20 acres

Map Unit Composition

Note: These Wharton, Gilpin, and Marrowbone soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Wharton and similar soils: Typically 45 percent, ranging from about 40 to 50 percent
Gilpin and similar soils: Typically 35 percent, ranging from about 30 to 40 percent
Marrowbone and similar soils: Typically 20 percent, ranging from about 15 to 25 percent

Typical Profile

Wharton

Surface layer:
0 to 2 inches—yellowish brown silt loam

Subsoil:
2 to 9 inches—yellowish brown silt loam; many dark yellowish brown mottles
9 to 17 inches—strong brown silty clay loam; many dark yellowish brown mottles
17 to 35 inches—light yellowish brown silty clay loam; light gray iron depletions and strong brown masses of oxidized iron
35 to 55 inches—yellowish brown silt loam; light gray iron depletions and strong brown masses of oxidized iron

Substratum:
55 to 65 inches—yellowish brown silt loam and silty clay loam; light gray iron depletions and yellowish red masses of oxidized iron

Hard bedrock:
65 inches—shale bedrock

Gilpin

(This pedon is representative of the Gilpin soils in the northern part of Russell County and differs from the pedon described in the section “Soil Series and Their Morphology.” This representative pedon is located in Buchanan County, Virginia.)

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 3 inches—brown silt loam

Subsoil:
3 to 5 inches—yellowish brown silt loam
5 to 19 inches—yellowish brown gravelly silt loam
19 to 30 inches—yellowish brown gravelly loam

Substratum:
30 to 35 inches—strong brown very gravelly loam

Soft bedrock:
35 to 39 inches—reddish brown, strong brown, and brown shale bedrock

Hard bedrock:
39 inches—shale bedrock

Marrowbone

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 5 inches—brown fine sandy loam

Subsoil:
5 to 10 inches—strong brown sandy loam
10 to 22 inches—strong brown gravelly sandy loam

Substratum:
22 to 33 inches—strong brown very gravelly loamy fine sand; common strong brown mottles

Soft bedrock:
33 to 45 inches—strong brown sandstone bedrock

Hard bedrock:
45 inches—sandstone bedrock

Minor Components

Similar components:
- Soils that are similar to the Wharton soil but have thin lenses of coal in the subsoil or in the substratum; on similar landforms
- Soils that are similar to the Wharton soil but have a seasonal high water table at a greater depth; on similar landforms
- Soils that are moderately deep to shale bedrock and moderately well drained; on landforms similar to those of the Wharton, Gilpin, and Marrowbone soils
- Soils that are shallow to shale bedrock; on landforms similar to those of the Wharton, Gilpin, and Marrowbone soils
- Soils that formed in residuum weathered from shale over a sandstone substratum; on landforms similar to those of the Wharton, Gilpin, and Marrowbone soils
- Soils that formed in residuum weathered from sandstone over a shale substratum; on landforms similar to those of the Wharton, Gilpin, and Marrowbone soils
- Soils that are deep to sandstone bedrock; on landforms similar to those of the Wharton, Gilpin, and Marrowbone soils

Dissimilar components:
- Soils that formed in residuum weathered from shale and are very deep to bedrock; on landforms similar to those of the Wharton, Gilpin, and Marrowbone soils
- Soils that formed in residuum weathered from sandstone, have loamy textures, and are shallow to bedrock; on landforms similar to those of the Wharton, Gilpin, and Marrowbone soils

Soil Properties and Qualities

Available water capacity: Wharton—high (about 10.3 inches); Gilpin—low (about 4.8 inches); Marrowbone—very low (about 2.7 inches)
Slowest saturated hydraulic conductivity: Wharton—moderately low (about 0.06 in/hr); Gilpin—moderately high (about 0.57 in/hr); Marrowbone—high (about 1.98 in/hr)
Depth class: Wharton—very deep (more than 60 inches); Gilpin and Marrowbone—moderately deep (20 to 40 inches)
Depth to root-restrictive feature: Wharton—40 to 70 inches to bedrock (lithic); Gilpin—20 to 40 inches to bedrock (paralithic); Marrowbone—20 to 40 inches to bedrock (paralithic) and 20 to 50 inches to bedrock (lithic)
Drainage class: Wharton—moderately well drained; Gilpin and Marrowbone—well drained
Depth to seasonal water saturation: Wharton—about 18 to 36 inches; Gilpin and Marrowbone—more than 6 feet
Water table (kind): Wharton—perched; Gilpin and Marrowbone—none
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low

Runoff class: Wharton—very high; Gilpin and Marrowbone—medium
Surface fragments: None
Parent material: Wharton—residuum weathered from shale and siltstone; Gilpin—residuum weathered from sandstone and some shale and siltstone; Marrowbone—residuum weathered from sandstone

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn and grass-legume hay; not suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- Frost action may damage the root system of winter grain crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Frost action may damage the root systems of plants.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Soil wetness may limit the use of log trucks.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks is reduced.
- The slope may restrict the use of some mechanical planting equipment.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Because of the coarse textured soil layers, the maintenance of haul roads and log landings is increased.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.
- Because of the high content of sand or gravel in the soil, sloughing is increased and cutbanks are more susceptible to caving.

Septic tank absorption fields

- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.
- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: Wharton—AA; Gilpin—U; Marrowbone—FF
Hydric soils: No

61B—Wyrick-Marbie silt loams, 3 to 8 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and valleys
Position on the landform: Footslopes and toeslopes
Size of areas: 5 to 25 acres

Map Unit Composition

Note: These Wyrick and Marbie soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Wyrick and similar soils: Typically 55 percent, ranging from about 50 to 60 percent
Marbie and similar soils: Typically 40 percent, ranging from about 35 to 45 percent

Typical Profile

Wyrick

Surface layer:
0 to 9 inches—dark yellowish brown silt loam

Subsoil:
9 to 60 inches—dark yellowish brown silty clay loam; black iron-manganese concretions

Marbie

Surface layer:
0 to 6 inches—dark yellowish brown silt loam

Subsoil:
6 to 22 inches—yellowish brown silt loam
22 to 36 inches—yellowish brown silt loam; dark yellowish brown masses of oxidized iron, black iron-manganese concretions, and light brownish gray iron depletions
36 to 60 inches—grayish brown silt loam; yellowish brown masses of oxidized iron
60 to 70 inches—strong brown silty clay

Minor Components

Dissimilar components:
- Chagrin soils, which are well drained and susceptible to flooding; on flood plains
- Holly soils, which are poorly drained and susceptible to flooding; on flood plains
- Soils that are moderately deep to bedrock; in landform positions similar to those of the Wyrick and Marbie soils
- Berks and Carbo soils, which are moderately deep to bedrock; on uplands

Similar components:
- Frederick soils, which have more clay in the subsoil than the Wyrick and Marbie soils; on adjacent backslopes
- Watahala soils, which have more chert in the soil than the Wyrick and Marbie soils; on adjacent backslopes
- Soils that have more clay in the subsoil than the Wyrick and Marbie soils; in similar landform positions
- Soils that are moderately well drained and that do not contain a dense layer; in landform positions similar to those of the Wyrick and Marbie soils

Soil Properties and Qualities

Available water capacity: Wyrick—moderate (about 8.5 inches); Marbie—moderate (about 6.8 inches)
Slowest saturated hydraulic conductivity: Wyrick—moderately high (about 0.57 in/hr); Marbie—moderately low (about 0.06 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: Wyrick—more than 60 inches; Marbie—32 to 40 inches to a fragipan
Drainage class: Wyrick—well drained; Marbie—moderately well drained
Depth to seasonal water saturation: Wyrick—more than 6 feet; Marbie—about 24 to 48 inches
Water table (kind): Wyrick—none; Marbie—perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Wyrick—medium; Marbie—high
Surface fragments: None
Parent material: Fine-loamy colluvium derived from limestone and shale

Use and Management Considerations

Cropland

Suitability: Well suited to corn and grass-legume hay; moderately suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The dense material restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The dense material may restrict the rooting depth of plants.

Woodland

Suitability: Well suited to northern red oak; moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks is reduced.
- The slope may restrict the use of some mechanical planting equipment.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low soil strength may create unsafe conditions for log trucks.
- These soils are well suited to haul roads and log landings.

Building sites

- The seasonal high water table may restrict the period when excavations can be made.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets

- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.
- The limited depth to a fragipan affects the ease of excavation and grading.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength may cause structural damage to local roads and streets.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e
Virginia soil management group: Wyrick—G; Marbie—W
Hydric soils: No

61C—Wyrick-Marbie silt loams, 8 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and valleys
Position on the landform: Footslopes and toeslopes
Size of areas: 5 to 25 acres

Map Unit Composition

Note: These Wyrick and Marbie soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Wyrick and similar soils: Typically 55 percent, ranging from about 50 to 60 percent
Marbie and similar soils: Typically 40 percent, ranging from about 35 to 45 percent

Typical Profile

Wyrick

Surface layer:
0 to 9 inches—dark yellowish brown silt loam

Subsoil:
9 to 60 inches—dark yellowish brown silty clay loam; black iron-manganese concretions

Marbie

Surface layer:
0 to 6 inches—dark yellowish brown silt loam

Subsoil:
6 to 22 inches—yellowish brown silt loam
22 to 36 inches—yellowish brown silt loam; dark yellowish brown masses of oxidized iron, black iron-manganese concretions, and light brownish gray iron depletions
36 to 60 inches—grayish brown silt loam; yellowish brown masses of oxidized iron
60 to 70 inches—strong brown silty clay

Minor Components

Dissimilar components:
- Chagrin soils, which are well drained and susceptible to flooding; on flood plains
- Holly soils, which are poorly drained and susceptible to flooding; on flood plains
- Soils that are moderately deep to bedrock; in landform positions similar to those of the Wyrick and Marbie soils
- Berks and Carbo soils, which are moderately deep to bedrock; on uplands

Similar components:
- Frederick soils, which have more clay in the subsoil than the Wyrick and Marbie soils; on adjacent backslopes
- Watahala soils, which have more chert in the soil than the Wyrick and Marbie soils; on adjacent backslopes
- Soils that have more clay in the subsoil than the Wyrick and Marbie soils; in similar landform positions
- Soils that are moderately well drained and that do not contain a dense layer; in landform positions similar to those of the Wyrick and Marbie soils

Soil Properties and Qualities

Available water capacity: Wyrick—moderate (about 8.5 inches); Marbie—moderate (about 6.8 inches)
Slowest saturated hydraulic conductivity: Wyrick—moderately high (about 0.57 in/hr); Marbie—moderately low (about 0.06 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: Wyrick—more than 60 inches; Marbie—32 to 40 inches to a fragipan
Drainage class: Wyrick—well drained; Marbie—moderately well drained
Depth to seasonal water saturation: Wyrick—more than 6 feet; Marbie—about 24 to 48 inches
Water table (kind): Wyrick—none; Marbie—perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Wyrick—medium; Marbie—high

Surface fragments: None
Parent material: Fine-loamy colluvium derived from limestone and shale

Use and Management Considerations

Cropland

Suitability: Well suited to grass-legume hay; moderately suited to corn and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The dense material restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The dense layer may restrict the rooting depth of plants.

Woodland

Suitability: Well suited to northern red oak; moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks is reduced.
- The slope may restrict the use of some mechanical planting equipment.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low soil strength may create unsafe conditions for log trucks.
- These soils are well suited to haul roads and log landings.

Building sites

- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface or subsoil layers increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The proper treatment of effluent from conventional septic systems is limited by the slope.

Local roads and streets

- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.
- The limited depth to a fragipan affects the ease of excavation and grading.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength may cause structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: Wyrick—G; Marbie—W
Hydric soils: No

W—Water

This map unit is in the Cumberland Plateau and Mountains (MLRA 125) and Southern Appalachian Ridges and Valleys (MLRA 128) Major Land Resource Areas. It consists of ponds, lakes, rivers, creeks, and reservoirs.

This map unit is not assigned any interpretive groups.

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as forestland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for agricultural waste management. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of gravel, sand, reclamation material, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various uses. Many of the tables identify the limitations that affect specified uses and indicate the severity of those limitations. The ratings in these tables are both verbal and numerical.

Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited by all of the soil features that affect a specified use or in terms that indicate the suitability of the soils for the use. Thus, the tables may show limitation classes or suitability classes. Terms for the limitation classes are *not limited, somewhat limited,* and *very limited*. The suitability ratings are expressed as *well suited, moderately suited, poorly suited,* and *unsuited* or as *good, fair,* and *poor*.

Numerical Ratings

Numerical ratings in the tables indicate the relative severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate

gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation. The limitations appear in order from the most limiting to the least limiting. Thus, if more than one limitation is identified, the most severe limitation is listed first and the least severe one is listed last.

Crops and Pasture

Joseph Wentz, District Conservationist, Natural Resources Conservation Service, and Scott Jessee, Extension Agent, Virginia Cooperative Extension Service, helped prepare this section.

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops and pasture plants are listed, and the system of land capability classification used by the Natural Resources Conservation Service is explained.

Effective pasture management practices include maintaining a mixture of grasses and legumes, rotating pasture, deferring grazing, controlling undesirable vegetation, and using proper stocking rates.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading “Detailed Soil Map Units.” Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Agriculture is the main industry in Russell County. The total number of farms is 1,128. According to the 2002 Census of Agriculture, Russell County has 168,903 acres in farming *(12)*. Approximately 26,630 acres are used for cropland and hayland, 116,880 acres are used for pastureland, and the remaining 25,393 acres are used for woodland, farmsteads, farm roads, and ponds or are in idle land. Burley tobacco and cattle production are the main sources of income on the farms.

The primary cash crop grown in the county is burley tobacco. Russell County ranks fourth in Virginia in burley tobacco production. Approximately 1,150 acres of burley tobacco are grown. The majority of tobacco patches are located on Frederick soils. Legislation in 2004 removed production restrictions (the quota system) so that producers can contract privately with tobacco companies. Alfalfa and grass-legume hay are rotated with tobacco. Soil and water conservation practices are needed on cropland to reduce the hazard of erosion and maintain soil productivity. In addition to crop and hay rotations, rye is commonly used as a winter cover crop. Other practices include stripcropping, permanent filter strips, grassed waterways, and runoff diversions. Corn grown for silage or grain has declined to less than 200 acres due to the decline in the number of dairies.

Livestock production includes cow/calf and stocker cattle operations. There is an annual inventory of approximately 41,000 head of cattle that depend on pasture forages for feed. Russell County ranks seventh in Virginia in number of cattle and calves. In recent decades, the sheep industry has declined due to predator problems and higher management requirements; however, interest has recently increased in hair sheep varieties. There also is currently some increased interest in meat goats.

Frederick soils are well suited to pasture where slopes are favorable. They are located in areas of limestone in the broader drainage areas between mountain ranges. These soils have a higher natural fertility than soils that occur in non-limestone areas. Species on improved pastures are often composed of mixes of cool-season grasses and legumes. In Russell County, orchardgrass, fescue, bluegrass, red clover, and white clover are common pasture species. These forages are being used for both pastureland and for hay production.

On native unimproved pastures (on the steeper slopes), brome species commonly grow. When soils are sampled in areas of these pastures, the soils are often low in

phosphate and potash. Although many of the soils formed from limestone parent material, pH values are occasionally low. Because slopes are steep and pastures cannot be traveled over with modern equipment, applications of fertilizer and lime are impractical.

Pasture erosion is a serious problem in Russell County. Steep, rocky slopes are inaccessible to equipment and are difficult to maintain. Many pastures are overgrazed, which limits the vegetative cover and thus subjects the soil to erosion.

Maintaining a better stand of vegetation in order to protect the soil surface can solve many of the erosion problems in pastures. Controlled grazing, fertilization, applications of lime, and better distribution of livestock water (so that livestock travel distances are reduced) are methods that improve vegetation stands and increase output per acre. The concept of rotational grazing is growing in popularity in the county and will be a useful practice in managing cover and controlling erosion on pastureland. After the first cutting of hay is produced, many producers incorporate their hay fields into the rotational system. Since these fields are commonly fenced separately, farmers also have the option of stockpiling forage for winter grazing. Concentrated winter feeding of cattle destroys cover, increases soil compaction and erosion, and impacts water quality. Stockpiling forages for winter grazing helps to minimize these negative impacts and reduces the costs of cattle production.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of map units in the survey area also is shown in the table.

The yields are based VALUES—the Virginia Agronomic Land Use Evaluation System *(21)*. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

Realistic yield goals can be maintained over a long-term basis through proper nutrient management and other soil amendments such as lime. Applications of nitrogen and phosphorus from organic or inorganic forms should be in keeping with approved nutrient management practices and regulations.

Pasture yields are expressed in terms of animal unit months. An animal unit month (AUM) is the amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in the table are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for forestland or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit *(18)*. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w, s,* or *c* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, forestland, wildlife habitat, or recreation.

The capability classification of the soils in this survey area is given in the section “Detailed Soil Map Units” and in table 5.

Virginia Soil Management Groups

The Virginia Agronomic Land Use Evaluation System (VALUES) is a system that ranks soils for management and productivity *(21)*. VALUES places each soil series in Virginia into one of 43 management groups. The format of the management groups, A through QQ, include the following soil characteristics—regional occurrence; parent material; landscape position or influence; solum thickness; dominant profile features,

such as texture; available water capacity for plants; and internal soil drainage. Yields that are both economically and environmentally feasible were assigned to each management group, based on yields of field trial crop data and research. The following paragraphs describe the soil management groups in Russell County.

Group A. The soils of this group formed in alluvial parent materials and are on gently sloping flood plains or stream terraces which have watersheds that originate west of the Blue Ridge. These soils are deep or very deep and are medium textured throughout. They have a high available water capacity and are well drained.

Group G. The soils of this group formed in locally transported, medium textured sediments of either colluvial or alluvial origin that overlie a wide range of residual materials. These soils are in landscape positions that include footslopes and toeslopes, the heads of drainageways, depressions, and narrow upland drainageways. These soils are deep and very deep. They are silty to loamy in the upper part of the subsoil, which is underlain with clayey to stony materials. They have a moderately high available water capacity and are moderately well drained or somewhat poorly drained.

Group L. The soils of this group formed from old transported deposits of alluvium or colluvium. These soils are common on stream terraces, footslopes, and older, elevated, upland landscapes that were once stream terraces. They are deep or very deep, have medium textured surface layers, have more clayey subsurface layers, and commonly contain gravel and rounded stones. They have a moderate or high available water capacity and typically are well drained.

Group M. The soils of this group formed in material weathered from carbonate rocks. These soils are on upland summits and side slopes. They are deep or very deep. They have reddish brown clayey subsurface layers that contain coarse fragments in some areas. They have a moderate available water capacity, unless the content of coarse fragments is significantly high, and they are well drained.

Group O. The soils of this group formed from transported materials ranging from mountain colluvium to old alluvium on dissected uplands and deposits on old elevated river terraces. These soils are very deep to shallow. They have very dark red clayey subsurface layers, which have significant amounts of coarse fragments in some areas. They have a moderate available water capacity and are well drained.

Group U. The soils of this group formed from a variety of residual parent materials, ranging from Triassic sediments to sandstone, shale, and limestone to colluvium from these materials. These soils are moderately deep to shallow and commonly have fine-loamy subsurface layers. They commonly have coarse fragments making up one-third the soil volume and, as a result, have a moderate or moderately low available water capacity. They are well drained or moderately well drained.

Group W. The soils of this group formed from mixed colluvium on stream terraces or footslopes. These soils have fragipans within the upper 3 feet. They have loamy subsurface horizons which commonly include coarse fragments. They have a moderately low available water capacity and range from moderately well drained to somewhat poorly drained.

Group Y. The soils of this group formed from the residuum of weathered limestone, shale, or other carbonate-influenced rocks. These soils represent upland landscapes. They are shallow to moderately deep. They have clayey subsurface layers, which contain coarse fragments in some areas. They have a moderate or low available water capacity where they are shallow to bedrock, and they are mostly well drained.

Group AA. The soils of this group formed from a variety of sediments on uplands. These soils are deep to shallow and have clayey subsurface horizons, which have coarse fragments in some areas. They have a moderately low available water capacity. They range from somewhat poorly drained to moderately well drained.

Group CC. The soils of this group formed in a range of parent materials, including alluvium and colluvium. These soils occur on a variety of landscapes, including uplands, stream terraces, colluvial areas, and bottomlands. They commonly have a

moderately deep solum, are very deep to bedrock, and have clayey-skeletal to coarse-loamy subsurface layers (which have as much as 70 percent coarse fragments in some areas). They have a moderately low available water capacity and are well drained.

Group FF. The soils of this group formed in sandstone and shale residual parent materials and mountain colluvium. These soils are on steeply dissected uplands and mountain side slopes. They are moderately shallow. They mostly have loamy-skeletal subsurface layers, which may contain 80 percent, or more, coarse fragments. As a result, the available water capacity is low or very low. The soils are well drained or moderately well drained.

Group HH. The soils of this group formed from loamy sediments in flood-plain positions. These soils are moderately deep to very deep and have fine-loamy or clayey subsurface textures. They have a moderate water available water capacity and range from somewhat poorly drained to moderately well drained.

Group JJ. The soils of this group formed from a wide variety of residual parent materials, ranging from sandstone, shale, and limestone to phyllite or schist. These soils are shallow to moderately deep, are dominantly loamy-skeletal throughout, and contain 30 to 70 percent coarse fragments. This group includes some very deep soils if the natural soil porosity has been disturbed. The soils of this group have a very low available water capacity and are well drained.

Group NN. The soils of this group formed in alluvium along streams or on terraces. These soils are undrained. They are moderately deep to very deep, have silty to clay loam subsurface layers, have a moderately high available water capacity, and are somewhat poorly drained or poorly drained.

The management groups for the map units in the survey area are given in the section “Detailed Soil Map Units” and in table 5.

Prime Farmland

Table 6 lists the map units in the survey area that are considered prime farmland. This list does not constitute a recommendation for a particular land use.

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation’s food supply.

Prime farmland is of major importance in meeting the Nation’s short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation’s prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria

for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 13,046 acres in the survey area, or nearly 4 percent of the total acreage, meets the soil requirements for prime farmland. Areas of this land are scattered along creeks and in lime valleys.

A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

For some soils identified in table 6 as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

Hydric Soils

This section lists the map unit components that are rated as hydric soils in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site *(6, 8)*.

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology *(3, 8, 9, 10)*. Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part *(4)*. These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established *(5)*. These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in “Soil Taxonomy” *(15)* and “Keys to Soil Taxonomy” *(17)* and in the “Soil Survey Manual” *(19)*.

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in “Field Indicators of Hydric Soils in the United States” *(6)*.

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

The following map unit meets the definition of hydric soils and, in addition, has at least one of the hydric soil indicators. This information can help in planning land uses;

however, onsite investigation is recommended to determine the hydric soils on a specific site *(6, 8)*.

30A Holly loam, 0 to 3 percent slopes, occasionally flooded

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The following map units, in general, do not meet the definition of hydric soils because they do not have one of the hydric soil indicators. A portion of these map units, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils occur and the location of the included hydric soils.

1E Berks-Chiswell complex, 35 to 55 percent slopes
1F Berks-Chiswell complex, 55 to 80 percent slopes
2E Berks-Gilpin complex, 35 to 55 percent slopes
2F Berks-Gilpin complex, 55 to 70 percent slopes
5E Berks-Weikert channery silt loams, 35 to 55 percent slopes
5F Berks-Weikert channery silt loams, 55 to 70 percent slopes
6E Berks-Westmoreland complex, 35 to 55 percent slopes
6F Berks-Westmoreland complex, 55 to 70 percent slopes
7E Bland silty clay loam, 25 to 50 percent slopes, eroded
8D Bland-Rock outcrop complex, 8 to 25 percent slopes, eroded
8E Bland-Rock outcrop complex, 25 to 50 percent slopes, eroded
9D Bland-Rock outcrop complex, karst, 8 to 35 percent slopes, eroded
11F Calvin-Rough complex, 35 to 80 percent slopes, very rocky
13C Carbo-Frederick-Urban land complex, 0 to 15 percent slopes, eroded
17A Chagrin loam, 0 to 3 percent slopes, occasionally flooded
25E Gilpin-Shelocta silt loams, 35 to 55 percent slopes, very stony
26F Gilpin-Shelocta silt loams, 55 to 70 percent slopes, rocky
27A Grigsby sandy loam, 0 to 3 percent slopes, occasionally flooded
36A Lobdell-Orrville complex, 0 to 3 percent slopes, occasionally flooded
37D Mandy-Paddyknob-Rock outcrop complex, 8 to 35 percent slopes, very stony
41A Ogles very stony loam, 0 to 3 percent slopes, occasionally flooded
54F Udorthents-Urban land complex, 0 to 80 percent slopes
61B Wyrick-Marbie silt loams, 3 to 8 percent slopes
61C Wyrick-Marbie silt loams, 8 to 15 percent slopes

Agricultural Waste Management

Soil properties are important considerations in areas where soils are used as sites for the treatment and disposal of organic waste and wastewater. Selection of soils with properties that favor waste management can help to prevent environmental damage.

Table 7, parts I, II, and III, show the degree and kind of soil limitations affecting the treatment of agricultural waste, including municipal and food-processing wastewater and effluent from lagoons or storage ponds. Municipal wastewater is the waste stream from a municipality. It contains domestic waste and may contain industrial waste. It may have received primary or secondary treatment. It is rarely untreated sewage. Food-processing wastewater results from the preparation of fruits, vegetables, milk, cheese, and meats for public consumption. In places it is high in content of sodium and chloride. In the context of this table, the effluent in lagoons and storage ponds is from facilities used to treat or store food-processing wastewater or domestic or animal waste. Domestic and food-processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content of carbonaceous and nitrogenous material; the content of nitrogen commonly ranges from 10 to 30

milligrams per liter. The wastewater from animal waste treatment lagoons or storage ponds, however, has much higher concentrations of these materials, mainly because the manure has not been diluted as much as the domestic waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 milligrams per liter. When wastewater is applied, checks should be made to ensure that nitrogen, heavy metals, and salts are not added in excessive amounts.

The ratings in the table are for waste management systems that not only dispose of and treat organic waste or wastewater but also are beneficial to crops (application of manure and food-processing waste, application of sewage sludge, and disposal of wastewater by irrigation) and for waste management systems that are designed only for the purpose of wastewater disposal and treatment (overland flow of wastewater, rapid infiltration of wastewater, and slow rate treatment of wastewater).

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect agricultural waste management. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Application of manure and food-processing waste not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. Manure is the excrement of livestock and poultry, and food-processing waste is damaged fruit and vegetables and the peelings, stems, leaves, pits, and soil particles removed in food preparation. The manure and food-processing waste are either solid, slurry, or liquid. Their nitrogen content varies. A high content of nitrogen limits the application rate. Toxic or otherwise dangerous wastes, such as those mixed with the lye used in food processing, are not considered in the ratings.

The ratings are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the waste is applied, and the method by which the waste is applied. The properties that affect absorption include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, and available water capacity. The properties that affect plant growth and microbial activity include reaction, the sodium adsorption ratio, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Application of sewage sludge not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. In the context of this table, sewage sludge is the residual product of the treatment of municipal sewage. The solid component consists mainly of cell mass, primarily bacteria cells that developed during secondary treatment and have incorporated soluble organics into their own bodies. The sludge has small amounts of sand, silt, and other solid debris. The content of nitrogen varies. Some sludge has

constituents that are toxic to plants or hazardous to the food chain, such as heavy metals and exotic organic compounds, and should be analyzed chemically prior to use.

The content of water in the sludge ranges from about 98 percent to less than 40 percent. The sludge is considered liquid if it is more than about 90 percent water, slurry if it is about 50 to 90 percent water, and solid if it is less than about 50 percent water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the sludge is applied, and the method by which the sludge is applied. The properties that affect absorption, plant growth, and microbial activity include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, available water capacity, reaction, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of sludge. Permanently frozen soils are unsuitable for waste treatment.

Disposal of wastewater by irrigation not only disposes of municipal wastewater and wastewater from food-processing plants, lagoons, and storage ponds but also can improve crop production by increasing the amount of water available to crops. The ratings in the table are based on the soil properties that affect the design, construction, management, and performance of the irrigation system. The properties that affect design and management include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, slope, and flooding. The properties that affect construction include stones, cobbles, depth to bedrock or a cemented pan, depth to a water table, and ponding. The properties that affect performance include depth to bedrock or a cemented pan, bulk density, the sodium adsorption ratio, salinity, reaction, and the cation-exchange capacity, which is used to estimate the capacity of a soil to adsorb heavy metals. Permanently frozen soils are not suitable for disposal of wastewater by irrigation.

Overland flow of wastewater is a process in which wastewater is applied to the upper reaches of sloped land and allowed to flow across vegetated surfaces, sometimes called terraces, to runoff-collection ditches. The length of the run generally is 150 to 300 feet. The application rate ranges from 2.5 to 16.0 inches per week. It commonly exceeds the rate needed for irrigation of cropland. The wastewater leaves solids and nutrients on the vegetated surfaces as it flows downslope in a thin film. Most of the water reaches the collection ditch, some is lost through evapotranspiration, and a small amount may percolate to the ground water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, and the design and construction of the system. Reaction and the cation-exchange capacity affect absorption. Reaction, salinity, and the sodium adsorption ratio affect plant growth and microbial activity. Slope, permeability, depth to a water table, ponding, flooding, depth to bedrock or a cemented pan, stones, and cobbles affect design and construction. Permanently frozen soils are unsuitable for waste treatment.

Rapid infiltration of wastewater is a process in which wastewater applied in a level basin at a rate of 4 to 120 inches per week percolates through the soil. The wastewater may eventually reach the ground water. The application rate commonly exceeds the rate needed for irrigation of cropland. Vegetation is not a necessary part of the treatment; hence, the basins may or may not be vegetated. The thickness of the soil material needed for proper treatment of the wastewater is more than 72 inches. As a result, geologic and hydrologic investigation is needed to ensure proper design and performance and to determine the risk of ground-water pollution.

The ratings in the table are based on the soil properties that affect the risk of

pollution and the design, construction, and performance of the system. Depth to a water table, ponding, flooding, and depth to bedrock or a cemented pan affect the risk of pollution and the design and construction of the system. Slope, stones, and cobbles also affect design and construction. Permeability and reaction affect performance. Permanently frozen soils are unsuitable for waste treatment.

Slow rate treatment of wastewater is a process in which wastewater is applied to land at a rate normally between 0.5 inch and 4.0 inches per week. The application rate commonly exceeds the rate needed for irrigation of cropland. The applied wastewater is treated as it moves through the soil. Much of the treated water may percolate to the ground water, and some enters the atmosphere through evapotranspiration. The applied water generally is not allowed to run off the surface. Waterlogging is prevented either through control of the application rate or through the use of tile drains, or both.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, and the application of waste. The properties that affect absorption include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, depth to bedrock or a cemented pan, reaction, the cation-exchange capacity, and slope. Reaction, the sodium adsorption ratio, salinity, and bulk density affect plant growth and microbial activity. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood of wind erosion or water erosion. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Forestland Productivity and Management

Randy Shortt, Forester, Virginia Department of Forestry, helped prepare this section.

The tables described in this section can help forest owners or managers plan the use of soils for wood crops. They show the potential productivity of the soils for wood crops and rate the soils according to the limitations that affect various aspects of forestland management.

Forestland Productivity

In table 8, the *potential productivity* of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that forest managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the “National Forestry Manual” *(13)*, which is available at the local office of the Natural Resources Conservation Service or on the Internet.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Trees to manage are those that are preferred for planting, seeding, or natural regeneration and those that remain in the stand after thinning or partial harvest.

Forestland Management

In table 9, parts I through V, interpretive ratings are given for various aspects of forestland management. The ratings are both verbal and numerical.

Some rating class terms indicate the degree to which the soils are suited to a

specified aspect of forestland management. *Well suited* indicates that the soil has features that are favorable for the specified management aspect and has no limitations. Good performance can be expected, and little or no maintenance is needed. *Moderately suited* indicates that the soil has features that are moderately favorable for the specified management aspect. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. *Poorly suited* indicates that the soil has one or more properties that are unfavorable for the specified management aspect. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. *Unsuited* indicates that the expected performance of the soil is unacceptable for the specified management aspect or that extreme measures are needed to overcome the undesirable soil properties.

Proper planning for timber harvesting is essential to minimize the potential impact to soil and water quality. A harvest plan should include logging roads, logging decks, streamside management zones, stream crossings, skid trails, schedule of activities, and Best Management Practices (BMP's) for each activity. Forests should be managed to increase economic and environmental benefits. A forest stewardship plan should be developed to guide management and utilization of the woodlands.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00).

Rating class terms for fire damage and seedling mortality are expressed as *low, moderate,* and *high*. Where these terms are used, the numerical ratings indicate gradations between the point at which the potential for fire damage or seedling mortality is highest (1.00) and the point at which the potential is lowest (0.00).

The paragraphs that follow indicate the soil properties considered in rating the soils. More detailed information about the criteria used in the ratings is available in the "National Forestry Manual" *(13)*, which is available at the local office of the Natural Resources Conservation Service or on the Internet.

For *limitations affecting construction of haul roads and log landings*, the ratings are based on slope, flooding, permafrost, plasticity index, the hazard of soil slippage, content of sand, the Unified classification, rock fragments on or below the surface, depth to a restrictive layer that is indurated, depth to a water table, and ponding. The limitations are described as slight, moderate, or severe. A rating of *slight* indicates that no significant limitations affect construction activities, *moderate* indicates that one or more limitations can cause some difficulty in construction, and *severe* indicates that one or more limitations can make construction very difficult or very costly.

The ratings of *suitability for log landings* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The soils are described as well suited, moderately suited, or poorly suited to use as log landings.

Ratings in the column *soil rutting hazard* are based on depth to a water table, rock fragments on or below the surface, the Unified classification, depth to a restrictive layer, and slope. Ruts form as a result of the operation of forest equipment. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that the soil is subject to little or no rutting, *moderate* indicates that rutting is likely, and *severe* indicates that ruts form readily.

Ratings in the column *hazard of off-road or off-trail erosion* are based on slope and on soil erodibility factor K. The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance. The hazard is described as slight, moderate, severe, or very severe. A rating of *slight* indicates that erosion is unlikely

under ordinary climatic conditions; *moderate* indicates that some erosion is likely and that erosion-control measures may be needed; *severe* indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and *very severe* indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

Ratings in the column *hazard of erosion on roads and trails* are based on the soil erodibility factor K, slope, and content of rock fragments. The ratings apply to unsurfaced roads and trails. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that little or no erosion is likely; *moderate* indicates that some erosion is likely, that the roads or trails may require occasional maintenance, and that simple erosion-control measures are needed; and *severe* indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed.

Ratings in the column *suitability for roads (natural surface)* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The ratings indicate the suitability for using the natural surface of the soil for roads. The soils are described as well suited, moderately suited, or poorly suited to this use.

Ratings in the columns *suitability for hand planting* and *suitability for mechanical planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately suited, poorly suited, or unsuited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *suitability for use of harvesting equipment* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, and ponding. The soils are described as well suited, moderately suited, or poorly suited to this use.

Ratings in the column *suitability for mechanical site preparation (surface)* are based on slope, depth to a restrictive layer, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 1 foot is considered in the ratings.

Ratings in the column *suitability for mechanical site preparation (deep)* are based on slope, depth to a restrictive layer, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 3 feet is considered in the ratings.

Ratings in the column *potential for damage to soil by fire* are based on texture of the surface layer, content of rock fragments and organic matter in the surface layer, thickness of the surface layer, and slope. The soils are described as having a low, moderate, or high potential for this kind of damage. The ratings indicate an evaluation of the potential impact of prescribed fires or wildfires that are intense enough to remove the duff layer and consume organic matter in the surface layer.

Ratings in the column *potential for seedling mortality* are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope. The soils are described as having a low, moderate, or high potential for seedling mortality.

Recreational Development

In table 10, parts I and II, the soils of the survey area are rated according to limitations that affect their suitability for recreational development. The ratings are both

verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the table are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The information in this table can be supplemented by other information in this survey, for example, interpretations for dwellings without basements, for local roads and streets, and for septic tank absorption fields.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect

the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Off-road motorcycle trails require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are stoniness, slope, depth to a water table, ponding, flooding, and texture of the surface layer.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the data in the tables described under the heading “Soil Properties.”

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil

structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, reclamation material, roadfill, and topsoil; plan structures for water management; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. Table 11, parts I and II, show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

The ratings in the table are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock

or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer.

Sanitary Facilities

Table 12, parts I and II, show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The

limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

A *trench sanitary landfill* is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

In an *area sanitary landfill*, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

Construction Materials

Table 13, parts I and II, give information about the soils as potential sources of gravel, sand, reclamation material, roadfill, and topsoil. Normal compaction, minor processing, and other standard construction practices are assumed.

Gravel and *sand* are natural aggregates suitable for commercial use with a

minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 13, part I, only the likelihood of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand or gravel, the soil is considered a likely source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

The soils are rated *good, fair,* or *poor* as potential sources of sand and gravel. A rating of *good* or *fair* means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of sand or gravel. The number 0.00 indicates that the layer is a poor source. The number 1.00 indicates that the layer is a good source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

In table 13, part II, the rating class terms are *good, fair,* and *poor*. The features that limit the soils as sources of these materials are specified in the table. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of reclamation material, roadfill, and topsoil. The lower the number, the greater the limitation.

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable

material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 14 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. Embankments that have zoned construction (core and shell) are not considered. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine particle-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties are shown in tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

Engineering Soil Properties

Table 15 gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. “Loam,” for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, “gravelly.” Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(1)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional

refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

Physical Soil Properties

Table 16 shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In the table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In the table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In the table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^{1}/_{3}$- or $^{1}/_{10}$-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2

millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity (K_{sat}). The estimates in the table indicate the rate of water movement, in micrometers per second, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In the table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion

by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the “National Soil Survey Handbook” *(14),* which is available at the local office of the Natural Resources Conservation Service or on the Internet.

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Chemical Soil Properties

Table 17 shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Effective cation-exchange capacity refers to the sum of extractable bases plus aluminum expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Water Features

Table 18 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils

of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. The table indicates, by month, depth to the top *(upper limit)* and base *(lower limit)* of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The table indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of

flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Soil Features

Table 19 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness of the restrictive layer, which significantly affects the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low, moderate,* or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(15, 17)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 20 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Alfisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udalf (*Ud*, meaning humid, plus *alf*, from Alfisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludalfs (*Hapl*, meaning minimal horizonation, plus *udalf*, the suborder of the Alfisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludalfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is very fine, mixed, active, mesic Typic Hapludalfs.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in

the survey area is described. The detailed description of each soil horizon follows standards in the “Soil Survey Manual” *(19)* and in the “Field Book for Describing and Sampling Soils” *(16)*. Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” *(15)* and in “Keys to Soil Taxonomy” *(17)*. Unless otherwise indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

Beech Grove Series

Physiographic province: Valley and Ridge
Landform: Hills on uplands
Parent material: Loamy residuum weathered from limestone
Drainage class: Excessively drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very shallow
Slope range: 8 to 100 percent

Associated Soils

- Benthole soils, which are very deep to bedrock and have a loamy-skeletal particle size; at the base of slopes below limestone cliffs
- Carbo soils, which are moderately deep to bedrock and have a very fine particle size; on landforms similar to those of the Beach Grove soils

Taxonomic Classification

Loamy, mixed, superactive, nonacid, mesic Lithic Udorthents

Typical Pedon

Beech Grove channery silt loam; in Scott County, Virginia; in a pasture, 0.9 mile southwest of the intersection of Highways VA-652 and VA-646, about 0.9 mile west-northwest of the intersection of Highways VA-649 and VA-650; Clinchport, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 43 minutes 48.00 seconds N. and long. 82 degrees 42 minutes 42.00 seconds W.

A—0 to 4 inches; very dark grayish brown (10YR 3/2) channery silt loam; moderate fine granular structure; friable, slightly sticky, moderately plastic; few very fine and medium roots; 25 percent subangular limestone channers; strong effervescence, by HCl, 1 normal; moderately alkaline; abrupt smooth boundary.
R—4 inches; limestone bedrock.

Range in Characteristics

Solum thickness: 1 to 8 inches
Depth to bedrock: 1 to 8 inches
Content of rock fragments: 15 to 35 percent
Reaction: Slightly acid to moderately alkaline

A horizon:
Hue—10YR
Value—3 or 4
Chroma—2 to 4
Texture—silt loam in the fine-earth fraction

Benthole Series

Physiographic province: Valley and Ridge
Landform: Base of slopes in valleys, mainly below limestone cliffs along creeks and rivers

Parent material: Stony, loamy colluvium derived from limestone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 60 to 90 percent

Associated Soils

- Beech Grove soils, which are very shallow to bedrock and have a loamy particle size; on hills on uplands
- Carbo soils, which are moderately deep to bedrock and have a very fine particle size; on hills on uplands
- Grigsby soils, which have a coarse-loamy particle size; on flood plains

Taxonomic Classification

Loamy-skeletal, mixed, superactive, mesic Typic Hapludalfs

Typical Pedon

Benthole gravelly silt loam; in Scott County, Virginia; in woodland on a northeast aspect at 1,350 feet in elevation, about 0.86 mile east-northeast of the intersection of Highways VA-689 and VA-691, about 0.34 mile north-northwest of the intersection of Highways VA-691 and US-58; Hilton, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 39 minutes 0.00 seconds N. and long. 82 degrees 24 minutes 26.00 seconds W.

Oe—0 to 1 inch; moderately decomposed plant material.

A—1 to 3 inches; very dark grayish brown (10YR 3/2) gravelly silt loam; moderate fine and medium granular structure; friable, moderately sticky, slightly plastic; 20 percent subrounded limestone gravel; neutral; abrupt smooth boundary.

Bt1—3 to 20 inches; brown (10YR 4/3) very cobbly silty clay loam; moderate very fine, fine, and medium subangular blocky structure; friable, moderately sticky, moderately plastic; many distinct continuous clay films on faces of peds; 20 percent subrounded limestone gravel and 30 percent subrounded limestone cobbles; neutral; clear wavy boundary.

Bt2—20 to 37 inches; yellowish brown (10YR 5/4) very cobbly silty clay loam; moderate very fine, fine, and medium subangular blocky structure; friable, moderately sticky, moderately plastic; many distinct continuous clay films on faces of peds; 20 percent subrounded limestone gravel and 30 percent subrounded limestone cobbles; slightly alkaline; clear wavy boundary.

Bt3—37 to 63 inches; dark yellowish brown (10YR 4/4) very cobbly silty clay loam; weak medium and coarse subangular blocky structure; friable, moderately sticky, moderately plastic; many distinct continuous clay films on faces of peds; 10 percent subrounded limestone stones, 20 percent subrounded limestone gravel, and 25 percent subrounded limestone cobbles; slight effervescence, by HCl, 1 normal; moderately alkaline.

Range in Characteristics

Solum thickness: 20 to more than 60 inches
Depth to bedrock: More than 60 inches
Reaction: Neutral to moderately alkaline
Rock fragments (content, type, size): 15 to 35 percent in the A horizon, 35 to 65 percent in the Bt horizon, and 35 to 90 percent in the C horizon; subrounded limestone gravel, cobbles, and stones

A horizon:
Hue—10YR
Value—2 or 3
Chroma—2 or 3
Texture—silt loam in the fine-earth fraction

Bt horizon:
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Texture—silt loam, loam, clay loam, or silty clay loam in the fine-earth fraction

C horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4
Chroma—3 or 4
Texture—silt loam, loam, clay loam, or silty clay loam in the fine-earth fraction

Berks Series

Physiographic province: Valley and Ridges and Appalachian Plateau
Landform: Hills and mountains on uplands
Parent material: Channery, loamy residuum weathered from shale and siltstone and some interbedded sandstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Moderately deep
Slope range: 8 to 80 percent

Associated Soils

- Calvin soils, which are redder than the Berks soils; on similar landforms
- Chiswell soils, which are shallow to bedrock; on landforms similar to those of the Berks soils
- Gilpin soils, which have more clay and fewer shale fragments than the Berks soils; on similar landforms
- Groseclose soils, which are very deep to bedrock and have a fine particle size; on landforms similar to those of the Berks soils
- Marrowbone soils, which have a coarse-loamy particle size; on landforms similar to those of the Berks soils
- Matewan soils, which have more sand and less silt than the Berks soils; on similar landforms
- Poplimento soils, which are very deep to bedrock and have a fine particle size; on landforms similar to those of the Berks soils
- Rough soils, which are very shallow to bedrock; on landforms similar to those of the Berks soils
- Weikert soils, which are shallow to bedrock; on landforms similar to those of the Berks soils
- Westmoreland soils, which are deep to bedrock and have a fine-loamy particle size; on landforms similar to those of the Berks soils
- Wharton soils, which formed in shale residuum, are deep and very deep to bedrock, and have fewer rock fragments in the soil than the Berks soils; on similar, less steep, and lower landforms

Taxonomic Classification

Loamy-skeletal, mixed, active, mesic Typic Dystrudepts

Typical Pedon

Berks channery silt loam in an area of Berks-Westmoreland complex, 35 to 55 percent slopes; in Russell County, Virginia; in woodland, 2.3 miles southeast of Rosedale, 6,000 feet south-southeast of the intersection of Highways VA-644 and VA-603; Elk Garden, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 56 minutes 28.70 seconds N. and long. 81 degrees 53 minutes 37.30 seconds W.

Oe—0 to 2 inches; moderately decomposed plant material; abrupt smooth boundary.

A—2 to 6 inches; dark brown (10YR 3/3) channery silt loam; moderate fine granular structure; friable, nonsticky, nonplastic; common medium and many very fine roots; many very fine interstitial pores; 20 percent angular shale channers; strongly acid; abrupt smooth boundary.

Bw1—6 to 22 inches; yellowish brown (10YR 5/4) very channery silt loam; weak medium subangular blocky structure; friable, nonsticky, nonplastic; common coarse and common very fine roots; many very fine interstitial pores; 40 percent angular shale channers; very strongly acid; gradual wavy boundary.

Bw2—22 to 32 inches; yellowish brown (10YR 5/4) very channery silt loam; weak medium subangular blocky structure; friable, nonsticky, nonplastic; common fine and medium roots; many very fine interstitial pores; 45 percent angular shale channers; very strongly acid; gradual wavy boundary.

C—32 to 38 inches; yellowish brown (10YR 5/4) extremely channery silt loam; massive; friable, nonsticky, nonplastic; few very fine roots; many very fine interstitial pores; 75 percent angular shale channers; very strongly acid; clear wavy boundary.

R—38 inches; shale bedrock.

Range in Characteristics

Solum thickness: 12 to 40 inches
Depth to bedrock: 20 to 40 inches; some pedons have a Cr layer overlying an R layer
Reaction: Very strongly acid to slightly acid
Rock fragments (content, type, size): 0 to 35 percent in the A or Ap horizon, 15 to 65 percent in the upper part of the Bw horizon, 35 to 65 percent in the lower part of the Bw horizon, and 35 to 80 percent in the C horizon; shale, siltstone, or fine-grained sandstone channers

A or Ap horizon:
Hue—10YR
Value—3 to 5
Chroma—3 or 4
Texture—silt loam in fine-earth fraction

Bw horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 8
Texture—loam, silt loam, or silty clay loam in fine-earth fraction

C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 8
Texture—loam or silt loam in fine-earth fraction

Cr horizon (if it occurs):
Bedrock—soft brown shale

R horizon:
Bedrock—hard brown shale

Bland Series

Physiographic province: Valley and Ridge
Landform: Hills on uplands; some areas have karst topography
Parent material: Residuum weathered from limestone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Moderately deep
Slope range: 8 to 50 percent

Associated Soils

- Berks soils, which formed in residuum derived from shale, are yellower than the Bland soils, have less clay, and have more rock fragments; on similar landforms at higher elevations
- Carbo soils, which have more clay and are yellower than the Bland soils; on similar landforms
- Poplimento soils, which formed in residuum derived from shale, are very deep, and are yellower than the Bland soils; on similar landforms at the higher elevations
- Westmoreland soils, which formed in residuum derived from shale, are deep to bedrock, and are yellower than the Bland soils; on similar landforms at the higher elevations

Taxonomic Classification

Fine, mixed, semiactive, mesic Typic Hapludalfs

Typical Pedon

Bland silty clay loam; in Tazewell County, Virginia; in pasture, about 2.3 miles southwest of Tazewell, 1.5 miles south-southeast of the junction of Highways US-460 and VA-16, about 500 yards northwest of the junction of Highways VA-16 and VA-604; Tazewell South, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 4 minutes 49.00 seconds N. and long. 81 degrees 33 minutes 9.00 seconds W.

Ap—0 to 4 inches; reddish gray (5YR 5/2) silty clay loam; weak fine and medium granular structure; friable, slightly sticky, slightly plastic; many fine roots; many very fine tubular pores; 1 percent subangular limestone channers and 1 percent subangular shale channers; strongly acid; abrupt smooth boundary.

BE—4 to 7 inches; reddish brown (5YR 4/3) silty clay; weak fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; many fine roots; common fine tubular pores; 1 percent subangular limestone channers and 1 percent subangular shale channers; strongly acid; clear smooth boundary.

Bt1—7 to 18 inches; reddish brown (5YR 4/3) silty clay; strong coarse subangular blocky structure; firm, slightly sticky, slightly plastic; common fine roots; common fine and medium tubular pores; few distinct discontinuous clay films on faces of peds; moderately acid; gradual smooth boundary.

Bt2—18 to 30 inches; weak red (2.5YR 4/2) silty clay; few medium prominent yellowish red (5YR 5/6) mottles; strong medium and coarse subangular blocky structure; firm, moderately sticky, moderately plastic; few fine roots; few fine tubular pores; common prominent continuous clay films on faces of peds; slightly acid; gradual smooth boundary.

C—30 to 36 inches; dusky red (2.5YR 3/2) channery clay; massive; firm, moderately sticky, slightly plastic; 30 percent subangular limestone channers; neutral; abrupt smooth boundary.
R—36 inches; dusky red (2.5YR 3/2) argillaceous limestone bedrock.

Range in Characteristics

Solum thickness: 20 to 40 inches
Depth to bedrock: 20 to 40 inches
Reaction: Strongly acid to neutral
Rock fragments (content, type): 0 to 15 percent in the Ap, E, BE, and Bt horizons and 15 to 50 percent in the C horizon; shale and limestone fragments

Ap horizon:
Hue—5YR
Value—3 to 5; where moist value is less than 4, the horizon is less than 7 inches thick
Chroma—2 or 3
Texture—silty clay loam

E horizon (if it occurs):
Hue—5YR
Value—3 to 5
Chroma—2 or 3
Texture—silt loam or silty clay loam

BE horizon:
Hue—5YR
Value—3 to 5
Chroma—2 or 3
Texture—silty clay loam or silty clay

Bt horizon:
Hue—2.5YR or 5YR
Value—3 or 4; higher value may occur in the lower part of horizon
Chroma—2 or 3; higher chroma may occur in the lower part of horizon
Texture—silty clay or clay with 45 to 60 percent clay and 4 to 8 percent sand

C horizon:
Hue—2.5YR or 5YR
Value—3 to 5
Chroma—2 to 4
Texture—silt loam to clay in the fine-earth fraction

Calvin Series

Physiographic province: Valley and Ridge
Landform: Hills and mountains on uplands
Parent material: Channery, loamy residuum weathered from shale and siltstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: High
Depth class: Moderately deep
Slope range: 15 to 80 percent

Associated Soils

- Berks soils, which are yellower than the Calvin soils; on similar landforms

- Ramsey soils, which are shallower to bedrock than the Calvin soils and have a loamy particle size; on mountains on uplands
- Rough soils, which are very shallow to bedrock; on landforms similar to those of the Calvin soils
- Wallen soils, which have more sand and less silt than the Calvin soils and are yellower; on mountains on uplands
- Westmoreland soils, which are deep to bedrock and have a fine-loamy particle size; on landforms similar to those of the Calvin soils

Taxonomic Classification

Loamy-skeletal, mixed, active, mesic Typic Dystrudepts

Typical Pedon

Calvin loam in an area of Calvin-Rough complex, 35 to 80 percent slopes, very rocky; in Russell County, Virginia; on a forested backslope, 500 feet north-northeast of the point where Highway VA-80 crosses over the top of Clinch Mountain at Hayters Gap; Hayters Gap, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 51 minutes 57.00 seconds N. and long. 81 degrees 56 minutes 48.00 seconds W.

Oe—0 to 1 inch; moderately decomposed plant material; abrupt smooth boundary.

A—1 to 4 inches; reddish brown (5YR 4/3) loam; weak fine granular structure; friable, nonsticky, nonplastic; common medium and many very fine roots; many very fine interstitial pores; 5 percent angular siltstone channers; strongly acid; clear wavy boundary.

AB—4 to 9 inches; reddish brown (5YR 5/4) loam; weak medium granular structure; friable, nonsticky, nonplastic; common coarse and common very fine roots; many very fine interstitial pores; 10 percent angular siltstone channers; very strongly acid; gradual wavy boundary.

Bw—9 to 16 inches; reddish brown (2.5YR 4/3) channery loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine and medium roots; many very fine interstitial pores; 25 percent angular siltstone channers; very strongly acid; gradual wavy boundary.

BC—16 to 25 inches; reddish brown (2.5YR 4/4) very channery loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine roots; many very fine interstitial pores; 40 percent angular siltstone channers; very strongly acid; gradual wavy boundary.

C—25 to 30 inches; reddish brown (2.5YR 4/4) very channery loam; massive; friable, nonsticky, nonplastic; few very fine roots; many very fine interstitial pores; 55 percent angular siltstone channers; very strongly acid; abrupt wavy boundary.

R—30 inches; siltstone bedrock.

Range in Characteristics

Solum thickness: 12 to 35 inches
Depth to bedrock: 20 to 40 inches
Reaction: Moderately acid to very strongly acid
Content of rock fragments: 5 to 15 percent in the A and AB horizons, 25 to 55 percent in the Bw and BC horizons, and 40 to 80 percent in the C horizon

A horizon:
Hue—5YR or 7.5YR
Value—3 or 4
Chroma—2 to 4
Texture—loam

AB horizon:
Hue—5YR or 7.5YR

Value—3 to 5
Chroma—2 to 4
Texture—loam

Bw horizon:
Hue—2.5YR or 5YR
Value—4 or 5
Chroma—3 to 6
Texture—silt loam or loam in the fine-earth fraction

BC horizon:
Hue—2.5YR or 5YR
Value—4 or 5
Chroma—3 to 6
Texture—silt loam or loam in the fine-earth fraction

C horizon:
Hue—2.5YR or 5YR
Value—3 or 4
Chroma—3 or 4
Texture—silt loam or loam in the fine-earth fraction

Carbo Series

Physiographic province: Valley and Ridge
Landform: Hills on uplands; some areas have karst topography
Parent material: Clayey residuum weathered from limestone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately low
Depth class: Moderately deep
Slope range: 0 to 65 percent

Associated Soils

- Beech Grove soils, which are very shallow to bedrock; on landforms similar to those of the Carbo soils
- Benthole soils, which are very deep to bedrock; on footslopes below limestone cliffs
- Bland soils, which are darker red than the Carbo soils; on similar landforms
- Frederick soils, which are very deep to bedrock; on landforms similar to those of the Carbo soils
- Groseclose soils, which are very deep to bedrock; on landforms similar to those of the Carbo soils
- Marbie soils, which are very deep to bedrock and are moderately well drained; on footslopes
- Poplimento, which are very deep to bedrock; on landforms similar to those of the Carbo soils
- Westmoreland, which are deep to bedrock; on landforms similar to those of the Carbo soils
- Wyrick soils, which are very deep to bedrock; on footslopes

Taxonomic Classification

Very fine, mixed, active, mesic Typic Hapludalfs

Typical Pedon

Carbo silty clay loam in an area of Carbo-Rock outcrop complex, 8 to 25 percent

slopes, eroded; in Russell County, Virginia; in a pasture, 0.6 mile southeast of the village of Elk Garden, 2,700 feet south of the intersection of Highways VA-656 and VA-657; Elk Garden, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 54 minutes 5.2 seconds N. and long. 81 degrees 58 minutes 51.5 seconds W.

Ap—0 to 6 inches; brown (10YR 4/3) silty clay loam; moderate medium granular structure; friable, nonsticky, nonplastic; many very fine roots; many very fine interstitial pores; neutral; clear smooth boundary.
Bt1—6 to 20 inches; strong brown (7.5YR 5/6) clay; moderate medium subangular blocky structure; friable, moderately sticky, slightly plastic; common very fine roots; common very fine interstitial pores; common faint discontinuous clay films on faces of peds; slightly acid; clear wavy boundary.
Bt2—20 to 29 inches; yellowish brown (10YR 5/6) clay; common fine prominent black (N 2.5/0) lithochromic mottles; moderate medium subangular blocky structure; firm, moderately sticky, moderately plastic; common very fine roots; few very fine interstitial pores; few faint discontinuous clay films on faces of peds; neutral; abrupt irregular boundary.
R—29 inches; limestone bedrock.

Range in Characteristics

Solum thickness: 20 to 40 inches
Depth to bedrock: 20 to 40 inches
Reaction: Very strongly acid to neutral in the A horizon and moderately acid to slightly alkaline in the B horizon
Rock fragments (content, type, size): 0 to 10 percent in the A and BA horizons and 0 to 15 percent in the Bt horizon; dominantly limestone and chert gravel but including shale channers

Ap horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 6
Texture—silty clay loam

A horizon (if it occurs):
Hue—7.5YR or 10YR
Value—3 or 4
Chroma—2 to 4
Texture—silty clay loam or silt loam

BA horizon (if it occurs):
Hue—7.5YR or 10YR
Value—3 to 6
Chroma—4 to 8
Texture—silty clay loam

Bt horizon:
Hue—5YR to 10YR
Value—4 to 6
Chroma—4 to 8
Texture—clay

Cedarcreek Series

Physiographic province: Appalachian Plateau
Landform: Ridges and spurs on mountains that have been surface mined for coal

Parent material: Mine spoil or earthy fill derived from shale, siltstone, sandstone, and coal
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 0 to 55 percent

Associated Soils

- Fiveblock soils, which formed in mine spoil dominated by sandstone fragments and are nonacid in reaction; in positions similar to those of the Cedarcreek soils
- Kaymine soils, which formed in mine spoil and are nonacid; in landscape positions similar to those of the Cedarcreek soils
- Sewell soils, which formed in mine spoil dominated by sandstone fragments, are acid in reaction, and have less clay and silt and more sand than the Cedarcreek soils; in similar positions
- Shelocta soils, which formed in colluvium from shale and sandstone; on footslopes
- Stonecoal soils, which formed in nonacid regolith of material from deep-mined coal, are very deep to bedrock, have more carbolithic rock fragments than the Cedarcreek soils, and are nonacid in reaction; in similar positions and on the higher landscape summits and shoulders

Taxonomic Classification

Loamy-skeletal, mixed, active, acid, mesic Typic Udorthents

Typical Pedon

Cedarcreek very channery loam; in Wyoming County, West Virginia; about 1.5 miles southwest of Ivy Knob Fire Tower, about 200 feet northwest of Crane Fork, approximately 2,400 feet in elevation; Pilot Knob, West Virginia USGS 7.5 Minute Quadrangle, NAD27:

A—0 to 3 inches; very dark gray (5Y 3/1) very channery loam; weak fine granular structure; very friable; many fine and medium roots; 5 percent subangular sandstone stones, 15 percent subangular siltstone channers, and 30 percent subangular sandstone channers; very strongly acid; gradual wavy boundary.
C1—3 to 15 inches; olive brown (2.5Y 4/4) very channery loam; common gray (10YR 6/1), common yellow (10YR 7/6), and common brown (10YR 5/3) lithochromic mottles; massive; firm; few fine and medium roots; 3 percent subangular coal gravel, 5 percent subangular sandstone stones, 22 percent subangular siltstone channers, and 25 percent subangular sandstone channers; very strongly acid; gradual wavy boundary.
C2—15 to 65 inches; dark olive gray (5Y 3/2) extremely channery loam; common brown (10YR 5/3), common yellow (10YR 7/6), and common gray (10YR 6/1) lithochromic mottles; massive; very firm; few fine and medium roots; 5 percent subangular coal gravel, 10 percent subangular sandstone stones, 27 percent subangular sandstone channers, and 28 percent subangular siltstone channers; very strongly acid.

Range in Characteristics

Solumn thickness: 2 to 10 inches
Depth to bedrock: More than 60 inches
Reaction: Extremely acid to strongly acid, except where surface layers have been limed
Rock fragments (content, type, size): 35 to 60 percent, by volume, in the A horizon and 35 to 80 percent in the C horizon; sandstone, mudstone, and coal; mostly channers and gravel but including stones and a few boulders

A horizon:
Hue—7.5YR to 5Y
Value—3 to 5
Chroma—1 to 6
Texture—loam in the fine-earth fraction

C horizon:
Hue—7.5YR to 5Y
Value—3 to 6
Chroma—1 to 8
Texture—loam, silt loam, or fine sandy loam in the fine-earth fraction

Chagrin Series

Physiographic province: Valley and Ridge
Landform: Flood plains along small creeks
Parent material: Fine-loamy alluvium derived from limestone, sandstone, and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 0 to 3 percent

Associated Soils

- Holly soils, which are poorly drained; on landforms similar to those of the Chagrin soils
- Lobdell soils, which are moderately well drained; on landforms similar to those of the Chagrin soils
- Orrville soils, which are somewhat poorly drained; on landforms similar to those of the Chagrin soils

Taxonomic Classification

Fine-loamy, mixed, active, mesic Dystric Fluventic Eutrudepts

Typical Pedon

Chagrin loam; in Lee County, Virginia; about 400 feet south of Highway US-Alternate 58 at a point 2,200 feet east of Highway VA-643; Ben Hur, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 44 minutes 51.00 seconds N. and long. 83 degrees 2 minutes 49.00 seconds W.

Ap—0 to 6 inches; brown (10YR 4/3) loam; moderate medium granular structure; very friable, slightly sticky, slightly plastic; many very fine roots; neutral; abrupt smooth boundary.

Bw1—6 to 18 inches; dark yellowish brown (10YR 4/4) loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; common very fine roots; many faint organic stains on surfaces along root channels; 1 percent rounded sandstone gravel; neutral; abrupt smooth boundary.

Bw2—18 to 42 inches; strong brown (7.5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine roots; common distinct organic stains on surfaces along root channels; 5 percent rounded sandstone gravel; neutral; clear wavy boundary.

C—42 to 62 inches; brown (7.5YR 4/4) sandy loam; massive; very friable, slightly sticky, slightly plastic; 10 percent rounded sandstone gravel; neutral.

Range in Characteristics

Solum thickness: 24 to 48 inches
Depth to bedrock: More than 60 inches
Reaction: Moderately acid to neutral
Rock fragments (content, type): 0 to 15 percent; rounded sandstone, subrounded chert, and subrounded shale

Ap horizon:
Hue—10YR
Value—4
Chroma—2 to 4
Texture—loam

A horizon (if it occurs):
Hue—10YR
Value—3 or 4
Chroma—2 to 4
Texture—loam

Bw horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 6
Texture—loam, silt loam, clay loam, sandy clay loam, or silty clay loam

C horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 6
Texture—loam, silt loam, or sandy loam

Chiswell Series

Physiographic province: Valley and Ridge
Landform: Hills on uplands
Parent material: Channery, loamy residuum weathered from shale and siltstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Shallow
Slope range: 35 to 80 percent

Associated Soils

- Berks soils, which are moderately deep to bedrock; on landforms similar to those of the Chiswell soils
- Groseclose soils, which are very deep to bedrock and have a fine particle size; on landforms similar to those of the Chiswell soils

Taxonomic Classification

Loamy-skeletal, mixed, active, mesic, shallow Typic Dystrudepts

Typical Pedon

Chiswell very channery silt loam in an area of Berks-Chiswell complex, 35 to 55 percent slopes; in Russell County, Virginia; in woodland, 0.6 mile northeast of Nashes Ford bridge, in a hairpin turn 1,900 feet north-northeast of the intersection of Highways

VA-646 and VA-645, and 400 feet from the hairpin turn northeast of Highway VA-646; Lebanon, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 58 minutes 26.30 seconds N. and long. 82 degrees 4 minutes 20.00 seconds W.

A—0 to 2 inches; very dark grayish brown (10YR 3/2) very channery silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; common very fine roots; 40 percent angular shale channers; extremely acid; abrupt smooth boundary.

Bw—2 to 7 inches; yellowish brown (10YR 5/4) very channery silt loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; common very fine roots; few faint silt coats on rock fragments; 45 percent angular shale channers; extremely acid; gradual wavy boundary.

C—7 to 12 inches; yellowish brown (10YR 5/4) very channery silt loam; massive; friable, slightly sticky, slightly plastic; few very fine roots; 55 percent angular shale channers; extremely acid; diffuse irregular boundary.

Cr—12 to 22 inches; shale bedrock.

Range in Characteristics

Solum thickness: 5 to 19 inches
Depth to bedrock: 10 to 20 inches
Reaction: Extremely acid to moderately acid
Rock fragments (content, type): 35 to 60 percent in the A horizon, 20 to 80 percent in the Bw horizon, and 45 to 90 percent in the C horizon; average of more than 35 percent in the textural control section; shale, siltstone, or fine-grained sandstone

A horizon:
Hue—5YR to 10YR
Value—3 to 5
Chroma—2 to 5
Texture—silt loam in the fine-earth fraction

Ap horizon (if it occurs):
Hue—5YR to 10YR
Value—3 to 5
Chroma—2 to 5
Texture—silt loam in the fine-earth fraction

Bw horizon:
Hue—5YR to 10YR
Value—4 to 6
Chroma—3 to 6
Texture—silt loam or loam in the fine-earth fraction

C horizon:
Hue—5YR to 5Y
Value—4 to 6
Chroma—3 to 8
Texture—silt loam or loam in the fine-earth fraction

Cr horizon:
Bedrock—multicolored soft shale bedrock

Fiveblock Series

Physiographic province: Appalachian Plateau
Landform: Ridges and spurs of mountains that have been surface mined for coal

Parent material: Mine spoil or earthy fill derived from sandstone and small amounts of siltstone, shale, and coal
Drainage class: Somewhat excessively drained
Slowest saturated hydraulic conductivity: High
Depth class: Very deep
Slope range: 0 to 80 percent

Associated Soils

- Cedarcreek soils, which formed in mine spoil not dominated by sandstone fragments, are acid in reaction, and have more clay and silt and less sand than the Fiveblock soils; in similar positions
- Sewell soils, which formed in mine spoil dominated by sandstone fragments and are acid in reaction; in positions similar to those of the Fiveblock soils
- Kaymine soils, which formed in mine spoil not dominated by sandstone fragments and are nonacid in reaction; in landscape positions similar to those of the Fiveblock soils
- Stonecoal soils, which formed in nonacid regolith of material from deep-mined coal, are nonacid in reaction, are very deep to bedrock, and have more carbolithic rock fragments than the Fiveblock soils; in similar positions and on the higher summits and shoulders

Taxonomic Classification

Loamy-skeletal, mixed, semiactive, nonacid, mesic Typic Udorthents

Typical Pedon

Fiveblock very channery sandy loam; in Wyoming County, West Virginia; in the Oceana District, 2.14 miles south of Lorado near Amherstdale Mine No. 4 access road, just southeast of the county line; Lorado, West Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 45 minutes 5.00 seconds N. and long. 81 degrees 42 minutes 24.00 seconds W.

A—0 to 6 inches; brown (10YR 4/3) very channery sandy loam; weak fine granular structure; very friable; many fine and medium roots throughout; 2 percent subangular sandstone boulders, 3 percent subangular sandstone stones, 5 percent subangular siltstone channers, and 40 percent subangular sandstone channers; moderately acid; gradual wavy boundary.

C1—6 to 25 inches; brown (10YR 4/3) very channery sandy loam; common brown (10YR 5/3) and common yellow (10YR 7/6) lithochromic mottles; massive; friable; common fine and medium roots throughout; 5 percent subangular sandstone boulders, 5 percent subangular siltstone channers, 10 percent subangular sandstone stones, and 35 percent subangular sandstone channers; neutral; gradual wavy boundary.

C2—25 to 65 inches; dark grayish brown (10YR 4/2) extremely channery sandy loam; common yellow (10YR 7/6) and common brown (10YR 5/3) lithochromic mottles; massive; friable; 5 percent subangular sandstone boulders, 15 percent subangular siltstone channers, 15 percent subangular sandstone stones, and 35 percent subangular sandstone channers; neutral.

Range in Characteristics

Solum thickness: 2 to 10 inches
Depth to bedrock: More than 60 inches
Reaction: Moderately acid to slightly alkaline
Rock fragments (content, type, size): 35 to 60 percent, by volume, in the A horizon and 35 to 80 percent in the C horizon; mostly sandstone with small amounts of siltstone, shale, and coal; mostly channers but including stones and boulders

A horizon:
Hue—10YR
Value—3 to 5
Chroma—1 to 4
Texture—sandy loam in the fine-earth fraction

C horizon:
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—1 to 6
Texture—sandy loam in the fine-earth fraction

Frederick Series

Physiographic province: Valley and Ridge
Landform: Hills on uplands; some areas have karst topography
Parent material: Clayey residuum weathered from limestone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 0 to 60 percent

Associated Soils

- Carbo soils, which are moderately deep to bedrock; on landforms similar to those of the Frederick soils
- Marbie soils, which have a fine-loamy particle-size and are moderately well drained; at the base of slopes
- Watahala soils, which have a fine-loamy over clayey particle size; on landforms similar to those of the Frederick soils
- Wyrick soils, which have a fine-loamy particle size; at the base of slopes

Taxonomic Classification

Fine, mixed, semiactive, mesic Typic Paleudults

Typical Pedon

Frederick gravelly silt loam; in Scott County, Virginia; in a pasture on a southern aspect on a convex slope, 750 feet north of the intersection of Highways F-605 and VA-915; Clinchport, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 38 minutes 12.00 seconds N. and long. 82 degrees 37 minutes 48.00 seconds W.

Ap—0 to 2 inches; brown (10YR 4/3) gravelly silt loam; moderate fine and medium granular structure; friable, moderately sticky, moderately plastic; common very fine roots; few very fine tubular pores; 20 percent angular chert gravel; strongly acid; abrupt smooth boundary.

BA—2 to 6 inches; brown (7.5YR 4/4) gravelly silty clay loam; moderate fine and medium subangular blocky structure; friable, moderately sticky, moderately plastic; common very fine roots; few very fine tubular pores; 20 percent angular chert gravel; strongly acid; clear smooth boundary.

Bt1—6 to 13 inches; yellowish red (5YR 5/8) silty clay; moderate fine and medium subangular blocky structure; friable, moderately sticky, moderately plastic; few very fine roots; few very fine tubular pores; few distinct clay films on faces of peds; 2 percent angular chert gravel; strongly acid; clear wavy boundary.

Bt2—13 to 30 inches; yellowish red (5YR 5/6) clay; moderate coarse subangular blocky structure parting to moderate fine subangular blocky; firm, moderately

sticky, moderately plastic; few very fine roots; few very fine tubular pores; many prominent clay films on faces of peds; 2 percent angular chert gravel; strongly acid; gradual wavy boundary.

Bt3—30 to 46 inches; yellowish red (5YR 5/6) clay; common fine prominent very pale brown (10YR 8/3) and many fine prominent reddish yellow (7.5YR 6/6) lithochromic mottles; moderate coarse subangular blocky structure parting to moderate fine subangular blocky; firm, moderately sticky, moderately plastic; few very fine roots; few very fine tubular pores; many prominent clay films on faces of peds; 2 percent angular chert gravel; very strongly acid; clear wavy boundary.

Bt4—46 to 62 inches; yellowish red (5YR 5/6) clay; common fine prominent very pale brown (10YR 8/2) and many coarse prominent brownish yellow (10YR 6/8) lithochromic mottles; moderate coarse angular and subangular blocky structure parting to moderate fine subangular blocky; firm, moderately sticky, moderately plastic; few very fine roots; few very fine tubular pores; many prominent clay films on faces of peds; 2 percent angular chert gravel; very strongly acid.

Range in Characteristics

Solum thickness: More than 60 inches
Depth to bedrock: More than 72 inches
Reaction: Very strongly acid to moderately acid, except in limed areas
Rock fragments (type, content): Dominantly chert; 0 to 35 percent in the A, E, BA, and BE horizons and 0 to 15 percent in the Bt, BC, and C horizons

Ap horizon:
Hue—5YR to 10YR
Value—4 to 6
Chroma—2 to 8
Texture—silt loam or silty clay loam in the fine-earth fraction

BA horizon or BE horizon (if it occurs):
Hue—2.5YR to 10YR
Value—4 to 6
Chroma—4 to 8
Texture—loam, silt loam, silty clay loam, or clay loam in the fine-earth fraction

Bt horizon:
Hue—2.5YR or 5YR
Value—4 to 6
Chroma—4 to 8
Texture—clay loam, silty clay loam, silty clay, or clay in the fine-earth fraction in the upper part of horizon; silty clay or clay in the lower part

BC horizon (if it occurs):
Hue—2.5YR to 10YR
Value—3 to 6
Chroma—3 to 8
Texture—silty clay or clay

Gilpin Series

Physiographic province: Valley and Ridges and Appalachian Plateau
Landform: Hills and mountains on uplands
Parent material: Fine-loamy residuum weathered from shale and siltstone and some sandstone
Drainage class: Well drained

Slowest saturated hydraulic conductivity: Moderately high
Depth class: Moderately deep
Slope range: 8 to 70 percent

Associated Soils

- Berks soils, which have more shale fragments and less clay in the soil than the Gilpin soils; on similar landscapes
- Lily soils, which are moderately deep to sandstone bedrock; on mountains on uplands
- Highsplint soils, which formed in sandstone, siltstone, and shale colluvium, are very deep to bedrock, and have more rock fragments in the soil than the Gilpin soils; in the lower backslope and footslope positions and in drainageways
- Marrowbone soils, which have a coarse-loamy particle size; on landforms similar to those of the Gilpin soils
- Matewan soils, which have a loamy-skeletal particle size; on landforms similar to those of the Gilpin soils
- Shelocta soils, which formed in sandstone, siltstone, and shale colluvium and are very deep to bedrock; on the lower backslope and footslope positions and in drainageways
- Wharton soils, which formed in shale, are very deep to bedrock, and are moderately well drained; in positions similar to those of the Gilpin soils and in the lower positions

Taxonomic Classification

Fine-loamy, mixed, active, mesic Typic Hapludults

Typical Pedon

Gilpin silt loam; in Scott County, Virginia; in woodland on a west-southwest aspect at 2,060 feet in elevation, about 0.48 mile east of the intersection of Highways VA-755 and VA-72, about 0.81 mile north-northeast of the intersection of Highways VA-72 and VA-723; Coeburn, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 52 minutes 54.00 seconds N. and long. 82 degrees 25 minutes 40.00 seconds W.

Oe—0 to 1 inch; moderately decomposed plant material.

A—1 to 3 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; few fine and medium and common very fine roots; many fine pores; common fine mica flakes in matrix; 5 percent subangular shale channers; strongly acid; abrupt smooth boundary.

BA—3 to 7 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium and coarse subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine, fine, and medium roots; many fine pores; common fine mica flakes in matrix; 5 percent subangular shale channers; strongly acid; clear wavy boundary.

Bt1—7 to 15 inches; yellowish brown (10YR 5/6) silty clay loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, moderately plastic; common very fine roots; many fine pores; common distinct clay films on faces of peds; common fine mica flakes in matrix; 10 percent subangular shale channers; strongly acid; gradual wavy boundary.

Bt2—15 to 24 inches; yellowish brown (10YR 5/6) silty clay loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, moderately plastic; common very fine roots; many fine pores; common faint clay films on faces of peds; common fine mica flakes in matrix; 10 percent subangular shale channers; strongly acid; gradual wavy boundary.

BC—24 to 31 inches; yellowish brown (10YR 5/4) channery silt loam; weak coarse subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine

roots; many fine pores; common fine mica flakes in matrix; 20 percent subangular shale channers; strongly acid; clear wavy boundary.
Cr—31 inches; shale bedrock.

Range in Characteristics

Solum thickness: 18 to 36 inches
Bedrock: At a depth of 20 to 40 inches; bedrock can be soft or hard; a layer of soft bedrock overlying harder bedrock occurs in some pedons
Reaction: Extremely acid to strongly acid
Content of rock fragments: 5 to 35 percent in the A and BA horizons, 5 to 35 percent in the Bt and BC horizons, and 30 to 75 percent in the C horizon

A horizon:
Hue—10YR
Value—2 to 4
Chroma—1 to 3
Texture—silt loam

BA horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 5
Texture—silt loam or loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture—silt loam, loam, or silty clay loam in the fine-earth fraction

BC horizon:
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—4 to 6
Texture—silt loam, loam, or silty clay loam in the fine-earth fraction

C horizon (if it occurs):
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—4 to 6
Texture—typically silt loam, loam, or silty clay loam in the fine-earth fraction; sandy loam or loamy fine sand in some pedons

Cr horizon:
Hue—5YR to 10YR
Value—4 or 5
Chroma—4 to 6
Texture—soft bedrock that crushes to silt loam, loam, sandy loam, or loamy sand

Grigsby Series

Physiographic province: Valley and Ridges and Appalachian Plateau
Landform: Flood plains along the Clinch River and small streams
Parent material: Coarse-loamy alluvium derived from sandstone and siltstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high

Depth class: Very deep
Slope range: 0 to 3 percent

Associated Soils

- Benthole soils, which are well drained and very deep to bedrock; on footslopes
- Ogles soils, which are well drained and have more rock fragments in the soil than the Grigsby soils; on similar landforms

Taxonomic Classification

Coarse-loamy, mixed, active, mesic Dystric Fluventic Eutrudepts

Typical Pedon

Grigsby sandy loam, 0 to 3 percent slopes; in Russell County, Virginia; approximately 1.65 miles southwest of the intersection of Highways VA-646 and VA-698; Lebanon, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 57 minutes 9.30 seconds N. and long. 82 degrees 6 minutes 15.30 seconds W.

Ap—0 to 13 inches; dark yellowish brown (10YR 4/4) sandy loam; moderate medium granular and moderate fine granular structure; very friable, nonsticky, nonplastic; many very fine and fine and few medium roots throughout; few fine dendritic tubular pores; slightly acid; abrupt smooth boundary.

Bw1—13 to 17 inches; dark yellowish brown (10YR 3/4) loam; weak fine and medium subangular blocky structure; very friable, slightly sticky, nonplastic; common very fine and fine and few medium and coarse roots throughout; common fine dendritic tubular pores; moderately acid; abrupt smooth boundary.

Bw2—17 to 43 inches; dark yellowish brown (10YR 4/4 and 4/6) sandy loam; weak coarse subangular blocky structure; very friable, nonsticky, nonplastic; few medium and coarse roots throughout; many fine dendritic tubular pores; moderately acid; clear irregular boundary.

Bw3—43 to 49 inches; strong brown (7.5YR 4/6) sandy loam; weak coarse subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine roots throughout; many fine dendritic tubular pores; moderately acid; clear irregular boundary.

C—49 to 65 inches; dark yellowish brown (10YR 4/4) sandy loam; massive; firm, nonsticky, nonplastic; moderately acid.

Range in Characteristics

Solum thickness: 30 to 50 inches
Depth to bedrock: More than 60 inches
Reaction: Moderately acid to neutral in the solum and strongly acid to neutral in the C horizon
Rock fragments (size, content): Coarse fragments, mostly gravel; 0 to 15 percent in the A and B horizons and 0 to 60 percent in the C horizon

A or Ap horizon:
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture—sandy loam

Bw horizon:
Hue—10YR or 7.5YR
Value—3 to 6
Chroma—3 to 6
Texture—loam, silt loam, fine sandy loam, or sandy loam

C horizon:
- Hue—10YR or 2.5Y
- Value—3 to 6
- Chroma—3 to 6
- Texture—loam, fine sandy loam, sandy loam, or loamy fine sand in the fine-earth fraction

Groseclose Series

Physiographic province: Valley and Ridge
Landform: Hills on uplands
Parent material: Clayey residuum weathered from limestone and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately low
Depth class: Very deep
Slope range: 8 to 35 percent

Associated Soils

- Berks soils, which are moderately deep and have a loamy-skeletal particle size; on landforms similar to those of the Groseclose soils
- Carbo soils, which are moderately deep and have a very fine particle size; on landforms similar to those of the Groseclose soils
- Chiswell soils, which are shallow to bedrock; on landforms similar to those of the Groseclose soils

Taxonomic Classification

Fine, mixed, semiactive, mesic Typic Hapludults

Typical Pedon

Groseclose silty clay loam; in Scott County, Virginia; in an area of hayland on a northeast aspect, about 0.87 mile east of the intersection of Highway VA-71 and Copper Creek, 1.0 mile south-southeast of the intersection of Highways VA-71 and VA-680; Hilton, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 44 minutes 9.00 seconds N. and long. 82 degrees 25 minutes 10.00 seconds W.

Ap—0 to 2 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine, medium, and coarse granular structure; very firm, slightly sticky, slightly plastic; common very fine roots; common very fine pores; strongly acid; clear smooth boundary.

BA—2 to 10 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine, medium, and coarse subangular blocky structure; very firm, slightly sticky, moderately plastic; few very fine roots; few very fine pores; strongly acid; abrupt smooth boundary.

Bt1—10 to 16 inches; yellowish red (5YR 4/6) clay; moderate fine, medium, and coarse subangular blocky structure; firm, moderately sticky, moderately plastic; few very fine roots; few very fine pores; common prominent clay films on faces of peds; few fine (10YR 2.5/1) iron-manganese concretions; strongly acid; clear wavy boundary.

Bt2—16 to 33 inches; yellowish red (5YR 5/6) silty clay loam; weak fine, medium, and coarse subangular blocky structure; friable, moderately sticky, moderately plastic; few very fine roots; common very fine pores; common distinct clay films on faces of peds; few fine (10YR 2.5/1) iron-manganese concretions; 5 percent angular shale channers; strongly acid; diffuse wavy boundary.

C—33 to 62 inches; strong brown (7.5YR 5/6) and yellowish brown (10YR 5/6) channery silt loam; massive; friable, slightly sticky, slightly plastic; few very fine pores; very few clay films on rock fragments; few fine (10YR 2.5/1) iron-manganese concretions; 30 percent angular shale channers; strongly acid.

Range in Characteristics

Solum thickness: 30 to 60 inches
Depth to bedrock: More than 60 inches
Reaction: Extremely acid to strongly acid
Rock fragments (content, type, size): 0 to 5 percent in the A and B horizons and 0 to 35 percent in the C horizon; shale channers or chert gravel; weathered shale fragments that crush easily to soil materials are not considered to be rock fragments

Ap horizon:
Hue—10YR
Value—3 to 5
Chroma—3 to 6
Texture—silty clay loam

BA horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture—silty clay loam

Bt horizon:
Hue—5YR to 10YR
Value—4 to 6
Chroma—4 to 8
Texture—silty clay loam, silty clay, or clay

C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture—silt loam or silty clay loam in the fine-earth fraction

Highsplint Series

Physiographic province: Appalachian Plateau
Landform: Ridges and spurs of mountains and hills and drainageways
Parent material: Colluvium derived from sandstone, siltstone, and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 8 to 80 percent

Associated Soils

- Gilpin soils, which formed in residuum weathered from shale and are moderately deep to bedrock; on landforms similar to those of the Highsplint soils and on the higher landscapes
- Marrowbone soils, which formed in residuum weathered from sandstone, are moderately deep to bedrock, and have more sand and less silt and clay than the Highsplint soils; on the higher summits and shoulders

- Matewan soils, which formed in rresiduum weathered from sandstone and are moderately deep to bedrock; on the higher summits and shoulders and on backslopes where sandstone outcrops are extensive
- Shelocta soils, which formed in colluvium derived from mixed colluvium from shale, siltstone, and sandstone, are very deep to bedrock, and have more silt and clay, less sand, and fewer rock fragments than the Highsplint soils; on similar landscapes

Taxonomic Classification

Loamy-skeletal, mixed, active, mesic Typic Dystrudepts

Typical Pedon

Highsplint channery silt loam; in Buchanan County, Virginia; in woodland, about 2 miles south-southeast of the intersection of Highways VA-83 and VA-620, about 4.5 miles west-southwest of Oakwood, 100 feet east of Highway VA-620; Vansant, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 11 minutes 32.00 seconds N. and long. 82 degrees 5 minutes 12.00 seconds W.

Oi—0 to 1 inch; slightly decomposed plant material.

A—1 to 3 inches; brown (10YR 4/3) channery silt loam; weak fine granular structure; friable, nonsticky, nonplastic; many medium and many very fine roots throughout; many very fine irregular and many very fine tubular pores; 15 percent subangular sandstone channers; moderately acid; abrupt wavy boundary.

Bw1—3 to 19 inches; dark yellowish brown (10YR 4/6) channery silt loam; weak medium and coarse subangular blocky structure; friable, slightly sticky, nonplastic; many fine and many coarse roots throughout; many very fine irregular and many very fine tubular pores; 6 percent subangular sandstone flagstones and 24 percent subangular sandstone channers; very strongly acid; gradual wavy boundary.

Bw2—19 to 38 inches; dark yellowish brown (10YR 4/4) very channery silt loam; many very coarse faint irregular brown (10YR 5/3) lithochromic mottles; weak medium subangular blocky structure; friable, nonsticky, nonplastic; common medium and common very fine roots throughout; many very fine tubular and many very fine irregular pores; 10 percent subangular sandstone flagstones and 40 percent subangular sandstone channers; very strongly acid; gradual wavy boundary.

Bw3—38 to 59 inches; yellowish brown (10YR 5/4) very flaggy silt loam; many very coarse faint irregular brown (10YR 4/3) lithochromic mottles; weak medium subangular blocky structure; friable, nonsticky, nonplastic; few very fine and fine roots throughout; many very fine tubular and many very fine irregular pores; 22 percent subangular sandstone flagstones and 33 percent subangular sandstone channers; very strongly acid; gradual wavy boundary.

C—59 to 82 inches; yellowish brown (10YR 5/4) very channery loam; common fine distinct irregular strong brown (7.5YR 5/6) and many very coarse distinct irregular dark brown (10YR 3/3) lithochromic mottles; massive; friable, slightly sticky, nonplastic; few very fine roots throughout; common very fine tubular and common very fine irregular pores; 10 percent subangular sandstone flagstones, 15 percent subangular sandstone gravel, and 30 percent subangular sandstone channers; very strongly acid.

Range in Characteristics

Solum thickness: 40 to 80 inches
Depth to bedrock: More than 60 inches
Reaction: Extremely acid to slightly acid
Content of rock fragments: 15 to 35 percent, by volume, in the A horizon, 25 to 60 percent in the B horizon, and 35 to 70 percent in the C horizon

A horizon:
Hue—10YR
Value—3 to 5
Chroma—2 to 4
Texture—silt loam in the fine-earth fraction

BA horizon (if it occurs):
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Texture—silt loam or loam in the fine-earth fraction

Bw horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture—loam, silt loam, clay loam, or silty clay loam in the fine-earth fraction

C horizon:
Hue—10YR
Value—4 to 6
Chroma—3 to 6
Texture—loam, silt loam, sandy loam, or fine sandy loam in the fine-earth fraction

Holly Series

Physiographic province: Valley and Ridge
Landform: Flood plains along small creeks
Parent material: Fine-loamy alluvium derived from limestone, sandstone, and shale
Drainage class: Poorly drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 0 to 3 percent

Associated Soils

- Chagrin soils, which are well drained; on flood plains
- Lobdell soils, which are moderately well drained; on flood plains
- Orrville soils, which are somewhat poorly drained; on flood plains

Taxonomic Classification

Fine-loamy, mixed, active, nonacid, mesic Fluvaquentic Endoaquepts

Typical Pedon

Holly loam; in Lee County, Virginia; in a pasture, 0.27 mile south-southeast of the intersection of Highways VA-659 and VA-656; Hubbard Springs, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 42 minutes 46.10 seconds N. and long. 83 degrees 11 minutes 35.90 seconds W.

Ap—0 to 4 inches; dark gray (10YR 4/1) loam; moderate medium granular structure; friable, slightly sticky, slightly plastic; common fine roots; common fine prominent yellowish red (5YR 4/6) masses of oxidized iron on faces of peds; slightly acid; clear wavy boundary.

Bg1—4 to 10 inches; gray (5Y 5/1) loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine roots; common

fine prominent strong brown (7.5YR 5/8) masses of oxidized iron on faces of peds; slightly acid; clear wavy boundary.

Bg2—10 to 34 inches; dark gray (5Y 4/1) loam; weak coarse subangular blocky structure; friable, slightly sticky, slightly plastic; few fine prominent strong brown (7.5YR 5/8) masses of oxidized iron on faces of peds; 2 percent rounded sandstone gravel; slightly acid; clear wavy boundary.

Cg—34 to 62 inches; dark gray (N 4/0) loam; massive; friable, slightly sticky, slightly plastic; 5 percent rounded sandstone gravel; slightly acid.

Range in Characteristics

Solum thickness: 20 to 44 inches
Depth to bedrock: More than 60 inches
Reaction: Moderately acid to neutral in the A horizon, strongly acid to neutral in the B horizon, and moderately acid to slightly alkaline in the C horizon
Content of rock fragments: 0 to 10 percent in the A horizon, 0 to 15 percent in the B horizon, and 0 to 25 percent in the C horizon
Other characteristics: Below a depth of 40 inches, the soil typically is stratified and includes loamy sand and sand; thin layers can be silty clay loam

A or Ap horizon:
Hue—10YR
Value—4
Chroma—1 or 2
Texture—loam

Bg horizon:
Hue—10YR to 5Y or neutral
Value—4 to 6
Chroma—2 or less
Texture—silt loam, loam, or silty clay loam; thin subhorizons of sandy loam occur in some pedons

Cg horizon:
Hue—10YR to 5Y or neutral
Value—4 to 6
Chroma—2 or less
Texture—silt loam, loam, sandy loam, or clay loam in the fine-earth fraction

Kaymine Series

Physiographic province: Appalachian Plateau
Landform: Ridges and spurs of mountains that have been surface mined for coal
Parent material: Mine spoil or earthy fill derived from shale, siltstone, sandstone, and coal
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 0 to 80 percent

Associated Soils

- Cedarcreek soils, which formed in mine spoil and are acid in reaction; in landscape positions similar to those of the Kaymine soils
- Fiveblock soils, which formed in mine spoil dominated by sandstone fragments, are

nonacid in reaction, and have more sand and less silt than the Kaymine soils; on summits
- Sewell soils, which formed in mine spoil dominated by sandstone fragments, have more sand and less silt than the Kaymine soils, and are acid in reaction; on summits
- Shelocta soils, which formed in colluvium derived from shale and sandstone; on footslopes
- Stonecoal soils, which formed in nonacid regolith of material from deep-mined coal, are very deep to bedrock, are nonacid in reaction, and have more carbolithic rock fragments than the Kaymine soils; in similar positions and on the higher summits and shoulders

Taxonomic Classification

Loamy-skeletal, mixed, active, nonacid, mesic Typic Udorthents

Typical Pedon

Kaymine very channery silt loam; in Buchanan County, Virginia; on a ridge above Elkins Branch and Lester Fork, about 3.6 measured miles north-northeast of the town limits of Grundy, $^{1}/_{3}$ mile west of Highway VA-642; Grundy, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 20 minutes 27.00 seconds N. and long. 82 degrees 3 minutes 17.00 seconds W.

A—0 to 4 inches; dark grayish brown (10YR 4/2) very channery silt loam; weak fine granular structure; friable, slightly sticky, nonplastic; many very fine roots throughout; common very fine moderate-continuity tubular and common very fine moderate-continuity irregular pores; 10 percent subangular sandstone channers and 25 percent subangular mudstone channers; neutral; clear wavy boundary.

C1—4 to 28 inches; dark brown (10YR 3/3) extremely channery silt loam; common medium faint irregular dark grayish brown (10YR 4/2) and common coarse distinct irregular yellowish brown (10YR 5/6) lithochromic mottles; massive; friable, slightly sticky, nonplastic; common very fine roots throughout; common very fine moderate-continuity tubular and common very fine moderate-continuity irregular pores; 15 percent subangular sandstone channers and 45 percent subangular mudstone channers; neutral; gradual wavy boundary.

C2—28 to 64 inches; dark brown (10YR 3/3) very flaggy silt loam; common fine faint irregular dark grayish brown (10YR 4/2) and common medium distinct irregular yellowish brown (10YR 5/6) lithochromic mottles; massive; friable, nonsticky, nonplastic; few very fine roots throughout; common very fine moderate-continuity tubular and common very fine moderate-continuity irregular pores; 3 percent subangular sandstone boulders, 8 percent subangular sandstone stones, 22 percent subangular mudstone flagstones, and 22 percent subangular mudstone channers; slightly alkaline.

Range in Characteristics

Solum thickness: 2 to 12 inches
Depth to bedrock: More than 60 inches
Reaction: Moderately acid to slightly alkaline
Rock fragments (content, type): 35 to 60 percent, by volume, in the A horizon and 35 to 80 percent in the C horizon; sandstone, siltstone, shale, and coal

A horizon:
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—0 to 4
Texture—silt loam in the fine-earth fraction

C horizon:
Hue—7.5YR to 2.5Y
Value—2 to 6
Chroma—1 to 8
Texture—loam or silt loam in the fine-earth fraction

Lily Series

Physiographic province: Valley and Ridge
Landform: Mountains on uplands
Parent material: Fine-loamy residuum weathered from sandstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Moderately deep
Slope range: 8 to 55 percent

Associated Soils

- Gilpin soils, which are moderately deep to paralithic shale bedrock; on landforms similar to those of the Lily soils
- Oriskany soils, which are very deep to bedrock and have a loamy-skeletal particle size; at the base of slopes
- Ramsey soils, which are shallow to bedrock; on landforms similar to those of the Lily soils
- Wallen soils, which have a loamy-skeletal particle size; on landforms similar to those of the Lily soils

Taxonomic Classification

Fine-loamy, siliceous, semiactive, mesic Typic Hapludults

Typical Pedon

Lily loam; in Scott County, Virginia; in a wooded area on a summit with a south-southwest aspect, on a convex slope, 0.86 mile south-southwest of the intersection of Highway VA-619 and Forest Service Road 2645, about 2.85 miles north of the intersection of Highways VA-619 and VA-653; Fort Blackmore, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 51 minutes 7.00 seconds N. and long. 82 degrees 36 minutes 55.00 seconds W.

A—0 to 3 inches; very dark grayish brown (10YR 3/2) loam; weak fine granular structure; very friable, slightly sticky, slightly plastic; few fine and medium and common very fine roots; many fine pores; 5 percent subangular sandstone gravel; strongly acid; abrupt smooth boundary.

BA—3 to 7 inches; brown (10YR 4/3) loam; weak medium granular structure; very friable, slightly sticky, slightly plastic; few very fine and fine and few medium roots; many fine pores; 5 percent subangular sandstone gravel; strongly acid; clear smooth boundary.

Bt1—7 to 15 inches; dark yellowish brown (10YR 4/4) loam; weak fine and medium subangular blocky structure; friable, moderately sticky, slightly plastic; common very fine roots; many fine pores; few faint clay films on faces of peds; 5 percent subangular sandstone gravel; strongly acid; clear wavy boundary.

Bt2—15 to 24 inches; dark yellowish brown (10YR 4/6) loam; weak medium and coarse subangular blocky structure; friable, moderately sticky, slightly plastic; common very fine roots; many fine pores; common distinct clay films on faces of peds; 5 percent subangular sandstone cobbles; strongly acid; clear smooth boundary.

C—24 to 28 inches; yellowish brown (10YR 5/6) cobbly sandy loam; massive; friable, slightly sticky, slightly plastic; few very fine roots; many fine pores; 5 percent subangular sandstone gravel and 15 percent subangular sandstone cobbles; strongly acid; abrupt smooth boundary.
R—28 inches; sandstone bedrock.

Range in Characteristics

Solum thickness: 20 to 40 inches
Depth to bedrock: 20 to 40 inches
Reaction: Very strongly acid or strongly acid
Content of rock fragments: 0 to 15 percent in the A horizon, 0 to 20 percent in the B horizon, and 0 to 35 percent in the C horizon

A horizon:
Hue—10YR
Value—2 to 4
Chroma—1 to 3
Texture—loam

BA horizon:
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Texture—loam or sandy loam in the fine-earth fraction

Bt horizon:
Hue—5YR to 10YR
Value—4 or 5
Chroma—4 to 8
Texture—loam, sandy clay loam, or clay loam in the fine-earth fraction

C horizon:
Hue—5YR to 10YR
Value—5 or 6
Chroma—4 to 8
Texture—loam or sandy loam in the fine-earth fraction

Lobdell Series

Physiographic province: Valley and Ridge
Landform: Flood plains along small creeks
Parent material: Fine-loamy alluvium derived from limestone, sandstone, and shale
Drainage class: Moderately well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 0 to 3 percent

Associated Soils

- Chagrin soils, which are well drained; on landforms similar to those of the Lobdell soils
- Holly soils, which are poorly drained; on landforms similar to those of the Lobdell soils
- Orrville soils, which are somewhat poorly drained; on landforms similar to those of the Lobdell soils

Taxonomic Classification

Fine-loamy, mixed, active, mesic Fluvaquentic Eutrudepts

Typical Pedon

Lobdell silt loam; in Lee County, Virginia; 400 feet west-southwest of the intersection of Highways VA-682 and VA-672; Rose Hill, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 38 minutes 12.00 seconds N. and long. 83 degrees 22 minutes 4.00 seconds W.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; moderate fine granular structure; friable, slightly sticky, slightly plastic; common very fine and fine roots; slightly acid; abrupt smooth boundary.

Bw1—8 to 20 inches; yellowish brown (10YR 5/4) silt loam; weak fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; common very fine and fine roots; few fine faint pale brown (10YR 6/3) iron depletions and few fine distinct yellowish brown (10YR 5/6) masses of oxidized iron on faces of peds; slightly acid; clear wavy boundary.

Bw2—20 to 35 inches; yellowish brown (10YR 5/4) loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine roots; common medium distinct light gray (10YR 7/2) iron depletions and common medium prominent yellowish brown (10YR 5/8) masses of oxidized iron on faces of peds; slightly acid; gradual wavy boundary.

Bw3—35 to 48 inches; brown (10YR 5/3) loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine roots; common medium prominent yellowish brown (10YR 5/8) masses of oxidized iron on faces of peds and many medium faint light gray (10YR 7/2) iron depletions; slightly acid; gradual wavy boundary.

C—48 to 62 inches; yellowish brown (10YR 5/4) and light brownish gray (10YR 6/2) loam; massive; friable, slightly sticky, slightly plastic; common medium prominent very dark brown (10YR 2/2) manganese masses on faces of peds; slightly acid.

Range in Characteristics

Solum thickness: 24 to 50 inches
Depth to bedrock: More than 60 inches
Reaction: Strongly acid to neutral in the A and B horizons and moderately acid to neutral in the C horizon
Rock fragments (content, type): 0 to 5 percent in the A horizon and 0 to 15 percent in the B and C horizons; rounded sandstone, subrounded chert, and subrounded shale

Ap horizon:
Hue—10YR
Value—3 or 4
Chroma—2 or 3
Texture—silt loam

Bw horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—3 or 4
Texture—silt loam or loam

C horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 4
Texture—silt loam or loam

Mandy Series

Physiographic province: Valley and Ridge
Landform: Mountains on uplands
Parent material: Residuum weathered from interbedded siltstone, shale, and fine-grained sandstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Moderately deep
Slope range: 8 to 35 percent

Associated Soils

- Paddyknob soils, which have less silt and more sand than the Mandy soils; on similar landforms

Taxonomic Classification

Loamy-skeletal, mixed, active, frigid Typic Dystrudepts

Typical Pedon

Mandy channery silt loam; in Pocahontas County, West Virginia; in a wooded area approximately 1.1 miles south and 60 degrees east of the confluence of Abes Run and the East Fork of the Greenbrier River; Thornwood, West Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 38 degrees 36 minutes 33.00 seconds N. and long. 79 degrees 39 minutes 35.00 seconds W.

Oi—0 to 1 inch; slightly decomposed plant material.
A—1 to 4 inches; very dark brown (10YR 2/2) channery silt loam; moderate fine granular structure; very friable; many very fine, fine, medium, and coarse roots; 15 percent channers; extremely acid; abrupt wavy boundary.
E—4 to 6 inches; dark brown (7.5YR 3/4) channery silt loam; moderate fine and medium granular structure; very friable; many very fine, fine, medium, and coarse roots; 15 percent channers; very strongly acid; abrupt wavy boundary.
BE—6 to 10 inches; dark yellowish brown (10YR 4/6) channery silt loam; weak fine subangular blocky structure; very friable; many very fine, fine, medium, and coarse roots; 25 percent channers; very strongly acid; clear wavy boundary.
Bw1—10 to 17 inches; yellowish brown (10YR 5/6) very channery silt loam; weak fine subangular blocky structure; friable; common very fine, fine, and medium roots; 35 percent channers; very strongly acid; clear wavy boundary.
Bw2—17 to 29 inches; yellowish brown (10YR 5/4) very channery silt loam; weak fine and medium subangular blocky structure; friable; few very fine, fine, and medium roots; 45 percent channers; very strongly acid; clear wavy boundary.
C—29 to 37 inches; yellowish brown (10YR 5/4) extremely channery silt loam; massive; friable; few fine roots; 65 percent channers; very strongly acid; clear wavy boundary.
Cr—37 inches; highly weathered siltstone bedrock.

Range in Characteristics

Solum thickness: 20 to 33 inches
Depth to bedrock: 20 to 40 inches
Reaction: Extremely acid to strongly acid
Rock fragments (content, size): 10 to 15 percent in the A horizon, 10 to 20 percent in the E horizon, 25 to 50 percent in the BE horizon, 25 to 50 percent in the Bw horizon, and 60 to 90 percent in the C horizon; average rock fragment content in the particle-size control section is more than 35 percent, by volume; mostly channers

A horizon:
Hue—10YR
Value—2 to 4
Chroma—2 to 4
Texture—silt loam

E horizon:
Hue—7.5YR or 10YR
Value—2 to 4
Chroma—3 or 4
Texture—silt loam or loam in the fine-earth fraction

BE horizon:
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—4 to 6
Texture—silt loam or loam in the fine-earth fraction

Bw horizon:
Hue—7.5YR or 10YR
Value—5 or 6
Chroma—4 to 6
Texture—silt loam or loam in the fine-earth fraction

C horizon:
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—4 to 8
Texture—silt loam or loam in the fine-earth fraction

Marbie Series

Physiographic province: Valley and Ridge
Landform: Base of slopes of hills and valleys
Parent material: Fine-loamy colluvium derived from limestone and shale
Drainage class: Moderately well drained
Slowest saturated hydraulic conductivity: Moderately low
Depth class: Very deep
Slope range: 3 to 15 percent

Associated Soils

- Carbo soils, which are well drained and have a very fine particle size; on hills on uplands
- Frederick soils, which are well drained and have a fine particle size; on hills on uplands
- Watahala soils, which are well drained and have more chert gravel in the soil than the Marbie soils; on hills on uplands
- Wyrick soils, which are well drained; on landforms similar to those of the Marbie soils

Taxonomic Classification

Fine-loamy, siliceous, semiactive, mesic Typic Fragiudults

Typical Pedon

Marbie silt loam; in Scott County, Virginia; in a pasture on a western aspect on a slightly concave footslope, 1.4 miles north-northwest of the intersection of Highways VA-680 and VA-681, about 1.1 miles east of the northernmost intersection of Highways

VA-680 and VA-671; Dungannon, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 46 minutes 27.00 seconds N. and long. 82 degrees 26 minutes 42.00 seconds W.

Ap—0 to 6 inches; dark yellowish brown (10YR 4/4) silt loam; moderate fine and medium granular structure; firm, slightly sticky, slightly plastic; many very fine and fine roots; few very fine tubular pores; 10 percent angular chert gravel; strongly acid; abrupt smooth boundary.

Bt1—6 to 22 inches; yellowish brown (10YR 5/6) silt loam; weak coarse subangular blocky structure; firm, moderately sticky, moderately plastic; brittle; few very fine and fine roots; common very fine tubular pores; common faint clay films on faces of peds; 5 percent angular chert gravel; strongly acid; gradual wavy boundary.

Bt2—22 to 36 inches; yellowish brown (10YR 5/6) silt loam; weak coarse subangular blocky structure; very firm, moderately sticky, moderately plastic; brittle; few very fine roots; few very fine tubular pores; common faint clay films on faces of peds; few medium faint dark yellowish brown (10YR 4/6) masses of oxidized iron on faces of peds, common coarse prominent black (10YR 2/1) iron-manganese concretions on faces of peds, and common coarse prominent light brownish gray (10YR 6/2) iron depletions throughout; 10 percent angular chert gravel; strongly acid; abrupt wavy boundary.

Btgx—36 to 60 inches; grayish brown (2.5Y 5/2) silt loam; weak coarse subangular blocky structure; very firm, slightly sticky, slightly plastic; brittle; few very fine tubular pores; few faint clay films on faces of peds; common medium and coarse prominent yellowish brown (10YR 5/6) masses of oxidized iron on faces of peds; 5 percent angular chert gravel; very strongly acid; clear wavy boundary.

2Bt—60 to 70 inches; strong brown (7.5YR 5/6) silty clay; weak fine and medium subangular blocky structure; friable, moderately sticky, moderately plastic; common distinct clay films on faces of peds; 2 percent angular chert gravel; very strongly acid.

Range in Characteristics

Solum thickness: 40 to 72 inches or more
Depth to bedrock: More than 60 inches
Reaction: Extremely acid to strongly acid, except in limed areas
Rock fragments (content, type): 0 to 15 percent in the A and Bt horizons, 0 to 35 percent in the Btx horizon, and 0 to 25 percent in the 2Bt horizon; chert, shale, siltstone, or fine-grained sandstone

Ap horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—2 to 4
Texture—silt loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 8
Texture—silt loam, loam, silty clay loam, or clay loam

Btx horizon:
Hue—7.5YR to 2.5Y
Value—4 to 8
Chroma—2 to 8
Texture—loam, clay loam, silt loam, or silty clay loam in the fine-earth fraction

2Bt horizon:
Hue—2.5YR to 10YR
Value—4 to 7
Chroma—2 to 6
Texture—clay loam, silty clay loam, silty clay, or clay in the fine-earth fraction

Marrowbone Series

Physiographic province: Appalachian Plateau
Landform: Ridges and spurs of mountains and hills
Parent material: Residuum weathered from sandstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: High
Depth class: Moderately deep
Slope range: 8 to 70 percent

Associated Soils

- Gilpin soils, which formed in shale, siltstone, and fine-grained sandstone and have more clay and less sand than the Marrowbone soils; on similar landscapes
- Berks soils, which formed in shale and siltstone, have more rock fragments, clay, and silt than the Marrowbone soils, and have less sand; on similar landscapes
- Shelocta soils, which formed in sandstone and shale colluvium, are very deep to bedrock, and have more clay and silt and less sand than the Marrowbone soils; on the lower landscape ridges and spur ridges and in drainageways
- Highsplint soils, which formed in sandstone and shale colluvium, are very deep to bedrock, have more clay and silt and less sand than the Marrowbone soils, and have more rock fragments; on the lower landscape ridges and spur ridges and in drainageways
- Wharton soils, which formed in shale and siltstone and are moderately well drained; on landforms similar to those of the Marrowbone soils

Taxonomic Classification

Coarse-loamy, mixed, semiactive, mesic Typic Dystrudepts

Typical Pedon

Marrowbone fine sandy loam; in Buchanan County, Virginia; in woodland, about 3.95 miles north-northeast of the town of Grundy, 2.95 miles north of the intersection of Highways VA-83 and VA-642 near Slate Creek, 1 mile south-southeast of the intersection of Highways VA-650 and VA-651 at Roseann; Grundy, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 20 minutes 32.00 seconds N. and long. 82 degrees 2 minutes 40.00 seconds W.

Oi—0 to 1 inch; slightly decomposed plant material.
A—1 to 5 inches; brown (7.5YR 4/4) fine sandy loam; weak fine granular structure; friable, nonsticky, nonplastic; common very fine and fine roots; many very fine moderate-continuity irregular and many very fine moderate-continuity tubular pores; 5 percent angular sandstone gravel; strongly acid; clear wavy boundary.
Bw1—5 to 10 inches; strong brown (7.5YR 5/6) sandy loam; weak medium subangular blocky structure; friable, nonsticky, nonplastic; common fine and medium and few very fine roots; common fine moderate-continuity tubular and irregular and many very fine moderate-continuity tubular and irregular pores; common mica flakes; 10 percent angular sandstone gravel; strongly acid; gradual wavy boundary.
Bw2—10 to 22 inches; strong brown (7.5YR 5/6) gravelly sandy loam; weak medium subangular blocky structure; friable, nonsticky, nonplastic; few fine and common

medium roots; many fine moderate-continuity tubular and irregular pores; common mica flakes; 25 percent angular sandstone gravel; strongly acid; gradual wavy boundary.

C—22 to 33 inches; strong brown (7.5YR 5/6) very gravelly loamy fine sand; common fine faint irregular strong brown (7.5YR 4/6) mottles; single grain; loose; few very fine and fine roots; common very fine and fine moderate-continuity tubular and irregular pores; common mica flakes; 10 percent subangular sandstone channers and 35 percent subangular sandstone gravel; strongly acid; gradual wavy boundary.

Cr—33 to 45 inches; strong brown (7.5YR 5/6) soft sandstone bedrock; common mica flakes; gradual wavy boundary.

R—45 inches; hard sandstone bedrock.

Range in Characteristics

Solum thickness: 20 to 40 inches
Depth to bedrock: 20 to 40 inches
Reaction: Very strongly acid to moderately acid throughout the profile, except in limed areas
Rock fragments (content, type, size): 0 to 15 percent, by volume, in the A horizon, 5 to 35 percent in individual horizons of the Bw horizon, and 10 to 50 percent in the C horizon; sandstone or orthoquartzite fragments mostly smaller than 3 inches in diameter but ranging to as much as 6 inches in diameter

A horizon:
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—2 to 4
Texture—fine sandy loam

Bw horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture—sandy loam or fine sandy loam in the fine-earth fraction

C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 6
Texture—loamy sand, loamy fine sand, sandy loam, or fine sandy loam in the fine-earth fraction

Cr horizon:
Hue—7.5YR or 10YR
Value—5 or 6
Chroma—6
Bedrock—soft sandstone bedrock that crushes to loamy fine sand, fine sand, or sand

Matewan Series

Physiographic province: Appalachian Plateau
Landform: Ridges and spurs of mountains and hills
Parent material: Residuum weathered from sandstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: High

Depth class: Moderately deep
Slope range: 55 to 80 percent

Associated Soils

- Berks soils, which weathered from shale residuum; on landforms similar to those of the Matewan soils and on the higher summits and shoulders
- Gilpin soils, which weathered from shale residuum; on landforms similar to those of the Matewan soils and on the higher summits and shoulders
- Highsplint soils, which were derived from sandstone and shale colluvium, are very deep to bedrock, and have more clay and silt and less sand than the Matewan soils; on the lower ridges and spurs and in drainageways
- Shelocta soils, which were derived from sandstone and shale colluvium, are very deep to bedrock, have more clay and silt and less sand than the Matewan soils, and have fewer rock fragments; on the lower ridges and spurs and in drainageways

Taxonomic Classification

Loamy-skeletal, mixed, active, mesic Typic Dystrudepts

Typical Pedon

Matewan flaggy fine sandy loam; in Buchanan County, Virginia; in woodland, about 400 feet north of Highway VA-600, about 1/4 mile west of the intersection of Highways VA-620 and VA-600, about 6.25 miles south-southeast of the town of Vansant; Vansant, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 8 minutes 37.00 seconds N. and long. 82 degrees 3 minutes 38.00 seconds W.

Oe—0 to 1 inch; moderately decomposed plant material.
A—1 to 4 inches; dark brown (10YR 3/3) flaggy fine sandy loam; weak fine granular structure; very friable, nonsticky, nonplastic; many very fine and fine roots; many very fine moderate-continuity tubular and irregular pores; 8 percent angular sandstone flagstones and 12 percent angular sandstone channers; moderately acid; abrupt wavy boundary.
Bw—4 to 21 inches; dark yellowish brown (10YR 4/6) very flaggy fine sandy loam; moderate medium subangular blocky structure; friable, slightly sticky, nonplastic; many fine and coarse roots; common very fine moderate-continuity tubular and irregular pores; 22 percent angular sandstone flagstones and 23 percent angular sandstone channers; strongly acid; gradual wavy boundary.
C1—21 to 31 inches; yellowish brown (10YR 5/6) very gravelly sandy loam; massive; very friable, nonsticky, nonplastic; few very fine and fine roots; common very fine moderate-continuity tubular and irregular pores; 35 percent angular sandstone gravel; strongly acid; gradual wavy boundary.
C2—31 to 38 inches; strong brown (7.5YR 5/6) extremely gravelly sandy loam; many coarse distinct irregular yellowish brown (10YR 5/6) mottles; massive; very friable, nonsticky, nonplastic; few very fine roots; common very fine moderate-continuity tubular and irregular pores; 20 percent angular sandstone channers and 40 percent angular sandstone gravel; strongly acid; abrupt wavy boundary.
R—38 inches; weathered sandstone bedrock.

Range in Characteristics

Solum thickness: 20 to 40 inches
Depth to bedrock: 20 to 40 inches
Reaction: Very strongly acid to moderately acid in the surface layer, except in limed areas, and extremely acid to strongly acid below the surface layer
Rock fragments (content, type, size): 15 to 25 percent, by volume, in the A horizon, 35 to 55 percent in the B horizon, and 35 to 75 percent in the C horizon; sandstone

fragments of gravel, channers, cobblestone, flagstone, and stones and boulders as much as 35 inches in diameter

A horizon:
Hue—10YR
Value—2 to 4
Chroma—2 to 4
Texture—fine sandy loam in the fine-earth fraction

B horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 or 6
Texture—sandy loam, fine sandy loam, or loam in the fine-earth fraction

C horizon:
Hue—7.5YR or 10YR
Value—5 or 6
Chroma—5 or 6
Texture—sandy loam, loamy sand, or loam in the fine-earth fraction

Ogles Series

Physiographic province: Valley and Ridges and Appalachian Plateau
Landform: Flood plains along small creeks and major rivers
Parent material: Stony, loamy alluvium derived from sandstone and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: High
Depth class: Very deep
Slope range: 0 to 3 percent

Associated Soils

- Grigsby soils, which have a coarse-loamy particle size; on landforms similar to those of the Ogles soils
- Oriskany soils, which have subrounded rock fragments; at the base of slopes

Taxonomic Classification

Loamy-skeletal, siliceous, active, mesic Fluventic Dystrudepts

Typical Pedon

Ogles very stony loam; in Scott County, Virginia; on a wooded flood plain about 0.79 mile southeast of the southernmost intersection of Highways VA-619 and VA-653, about 2.17 miles northwest of the intersection of Highways VA-619 and VA-65; Fort Blackmore, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 47 minutes 58.00 seconds N. and long. 82 degrees 36 minutes 0.00 seconds W.

Oe—0 to 2 inches; moderately decomposed plant material.
A—2 to 6 inches; very dark brown (10YR 2/2) very stony loam; weak fine granular structure; very friable, nonsticky, nonplastic; many very fine, fine, and medium roots; common medium interstitial pores; 2 percent well rounded sandstone gravel, 18 percent well rounded sandstone stones, and 20 percent well rounded sandstone cobbles; moderately acid; clear wavy boundary.
BA—6 to 10 inches; dark yellowish brown (10YR 3/4) very stony loam; weak fine granular structure; very friable, nonsticky, nonplastic; many very fine, fine, and medium roots; common medium interstitial pores; 2 percent well rounded

sandstone gravel, 18 percent well rounded sandstone stones, and 20 percent well rounded sandstone cobbles; moderately acid; clear wavy boundary.

Bw—10 to 23 inches; yellowish brown (10YR 5/6) extremely stony sandy loam; weak coarse granular structure; very friable, nonsticky, nonplastic; common very fine and fine and few medium and coarse roots; common medium interstitial pores; 4 percent well rounded sandstone gravel, 34 percent well rounded sandstone stones, and 37 percent well rounded sandstone cobbles; moderately acid; gradual wavy boundary.

C1—23 to 47 inches; dark yellowish brown (10YR 4/6) extremely stony loamy sand; massive; very friable, nonsticky, nonplastic; few very fine and fine roots; common medium interstitial pores; 3 percent well rounded sandstone gravel, 37 percent well rounded sandstone cobbles, and 40 percent well rounded sandstone stones; strongly acid; gradual wavy boundary.

C2—47 to 65 inches; dark yellowish brown (10YR 4/6) extremely stony loamy sand; massive; very friable, nonsticky, nonplastic; few very fine and fine roots; common medium interstitial and few very coarse tubular pores; 3 percent well rounded sandstone gravel, 40 percent well rounded sandstone stones, and 42 percent well rounded sandstone cobbles; strongly acid.

Range in Characteristics

Solum thickness: 20 to 40 inches
Depth to bedrock: More than 60 inches
Reaction: Very strongly acid to moderately acid, except in limed areas
Rock fragments (content, type, size): 35 to 60 percent in the A horizon and 35 to 85 percent in the B and C horizons; well rounded sandstone gravel, cobbles, and stones

A horizon:
Hue—10YR
Value—2 to 4
Chroma—2 to 4
Texture—loam in the fine-earth fraction

BA horizon:
Hue—10YR
Value—2 to 4
Chroma—2 to 4
Texture—loam in the fine-earth fraction

Bw horizon:
Hue—10YR to 7.5YR
Value—4 or 5
Chroma—4 to 6
Texture—loam or sandy loam in the fine-earth fraction

C horizon:
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—3 to 6
Texture—sandy loam or loamy sand in the fine-earth fraction

Oriskany Series

Physiographic province: Valley and Ridge
Landform: Base of slopes on hills, mountains, and valleys and side slopes of hills and mountains

Parent material: Stony, loamy colluvium derived from sandstone and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: High
Depth class: Very deep
Slope range: 8 to 55 percent

Associated Soils

- Berks and Gilpin soils, which are moderately deep to shale bedrock; on hills and mountains on uplands
- Ramsey soils, which are shallow to sandstone bedrock; on mountains on uplands
- Tumbling soils, which have a fine particle-size and have fewer stones on the surface than the Oriskany soils; on similar landforms
- Lily soils, which are moderately deep to sandstone bedrock; on mountains on uplands
- Ogles soils, which are susceptible to flooding; on flood plains
- Poplimento soils, which are very deep to bedrock and have fewer rock fragments and more clay in the soil than the Oriskany soils; on hills
- Westmoreland soils, which are deep to bedrock; on hills

Taxonomic Classification

Loamy-skeletal, siliceous, semiactive, mesic Typic Hapludults

Typical Pedon

Oriskany very cobbly fine sandy loam, 15 to 35 percent slopes, extremely stony; in Russell County, Virginia; in woodland, 1.4 miles east-northeast of the intersection of the Scott-Russell County line and Highway VA-607; Dungannon, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 52 minutes 21.00 seconds N. and long. 82 degrees 22 minutes 38.00 seconds W.

Oe—0 to 2 inches; moderately decomposed plant material.

A—2 to 6 inches; very dark grayish brown (10YR 3/2) very cobbly fine sandy loam; moderate fine granular structure; friable, slightly sticky, slightly plastic; common fine and medium roots; 20 percent subrounded sandstone gravel and 20 percent subrounded sandstone cobbles; slightly acid; abrupt smooth boundary.

E—6 to 10 inches; yellowish brown (10YR 5/4) very cobbly fine sandy loam; moderate coarse granular structure; friable, slightly sticky, slightly plastic; common fine and medium roots; 20 percent subrounded sandstone gravel and 20 percent subrounded sandstone cobbles; moderately acid; clear smooth boundary.

BE—10 to 17 inches; light yellowish brown (10YR 6/4) very gravelly loam; weak fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; common medium and coarse roots; 10 percent subrounded sandstone cobbles and 30 percent subrounded sandstone gravel; moderately acid; clear smooth boundary.

Bt1—17 to 26 inches; reddish yellow (7.5YR 6/6) very gravelly loam; weak fine and medium subangular blocky structure; friable, moderately sticky, moderately plastic; few fine roots; common distinct clay films on faces of peds; 15 percent subrounded sandstone cobbles and 30 percent subrounded sandstone gravel; strongly acid; gradual wavy boundary.

Bt2—26 to 36 inches; reddish yellow (7.5YR 6/6) very cobbly loam; common fine prominent very pale brown (10YR 7/4) lithochromic mottles; moderate fine and medium subangular blocky structure; friable, moderately sticky, moderately plastic; few fine roots; common distinct clay films on faces of peds; 20 percent subrounded sandstone cobbles and 25 percent subrounded sandstone gravel; strongly acid; gradual wavy boundary.

Bt3—36 to 52 inches; strong brown (7.5YR 5/6) very cobbly clay loam; common fine prominent very pale brown (10YR 7/4) lithochromic mottles; moderate fine and medium subangular blocky structure; friable, moderately sticky, moderately plastic; few very fine and fine roots; common distinct clay films on faces of peds; 20 percent subrounded sandstone cobbles and 25 percent subrounded sandstone gravel; strongly acid; gradual wavy boundary.

Bt4—52 to 70 inches; reddish yellow (7.5YR 6/6) very cobbly sandy clay loam; common fine prominent yellowish brown (10YR 5/4) mottles; weak coarse subangular blocky structure; friable, moderately sticky, moderately plastic; few very fine and fine roots; few distinct clay films on faces of peds; 15 percent subrounded sandstone cobbles and 25 percent subrounded sandstone gravel; strongly acid.

Range in Characteristics

Solum thickness: 40 to more than 60 inches
Depth to bedrock: More than 60 inches
Reaction: Very strongly acid or strongly acid, except in limed areas
Rock fragments (content, type, size): 35 to 60 percent in the A horizon, 35 to 65 percent in the E and BE horizons, and 35 to 75 percent in the Bt and C horizons; a combination of subrounded sandstone gravel, cobbles, and stones

A horizon:
Hue—10YR
Value—2 to 4
Chroma—2 to 4
Texture—fine sandy loam in the fine-earth fraction

E and BE horizons:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 6
Texture—fine sandy loam, sandy loam, or loam in the fine-earth fraction

Bt horizon:
Hue—5YR to 10YR
Value—4 to 6
Chroma—4 to 8
Texture—clay loam, sandy clay loam, or loam in the fine-earth fraction

C horizon (if it occurs):
Hue—7.5YR to 10YR
Value—4 to 6
Chroma—4 to 8
Texture—sandy loam, sandy clay loam, or loam in the fine-earth fraction

Orrville Series

Physiographic province: Valley and Ridge
Landform: Flood plains along small creeks
Parent material: Fine-loamy alluvium derived from limestone, sandstone, and shale
Drainage class: Somewhat poorly drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 0 to 3 percent

Associated Soils

- Chagrin soils, which are well drained; on landforms similar to those of the Orrville soils
- Holly soils, which are poorly drained; on landforms similar to those of the Orrville soils
- Lobdell soils, which are moderately well drained; on landforms similar to those of the Orrville soils

Taxonomic Classification

Fine-loamy, mixed, active, nonacid, mesic Fluventic Endoaquepts

Typical Pedon

Orrville loam; in Lee County, Virginia; in hayland 0.27 mile south of the intersection of Highways US-58 and VA-660; Rose Hill, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 40 minutes 59.90 seconds N. and long. 83 degrees 16 minutes 6.40 seconds W.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) loam; moderate fine granular structure; friable, slightly sticky, slightly plastic; common very fine and fine roots; 1 percent rounded sandstone gravel; moderately acid; clear wavy boundary.

Bw—6 to 13 inches; yellowish brown (10YR 5/4) loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; common very fine roots; few medium prominent strong brown (7.5YR 5/8) masses of oxidized iron on faces of peds and few fine distinct grayish brown (10YR 5/2) iron depletions; 1 percent rounded sandstone gravel; moderately acid; gradual wavy boundary.

Bg1—13 to 28 inches; grayish brown (2.5Y 5/2) loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine roots; common medium prominent strong brown (7.5YR 5/8) masses of oxidized iron on faces of peds; 1 percent rounded sandstone gravel; slightly acid; gradual wavy boundary.

Bg2—28 to 34 inches; grayish brown (10YR 5/2) loam; weak coarse subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine roots; common coarse prominent brownish yellow (10YR 6/8) masses of oxidized iron on faces of peds; 1 percent rounded sandstone gravel; slightly acid; clear wavy boundary.

Cg1—34 to 47 inches; gray (N 5/0) loam; massive; friable, slightly sticky, slightly plastic; few coarse prominent brownish yellow (10YR 6/8) masses of oxidized iron on faces of peds; 1 percent rounded sandstone gravel; moderately acid; abrupt wavy boundary.

Cg2—47 to 62 inches; dark gray (5Y 4/1) sandy loam; massive; very friable, nonsticky, nonplastic; 10 percent rounded sandstone gravel; slightly acid.

Range in Characteristics

Solum thickness: 24 to 50 inches
Depth to bedrock: More than 60 inches
Reaction: Strongly acid to slightly acid in the A and B horizons and strongly acid to neutral in the C horizon
Rock fragments (content, type, size): 0 to 5 percent in the A horizon, 0 to 15 percent in the B horizon, and 0 to 25 percent in the C horizon; rounded sandstone, subrounded chert, or subrounded shale

Ap horizon:
Hue—10YR
Value—4
Chroma—2
Texture—loam

Bw horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—3 to 6
Texture—silt loam or loam

Bg horizon:
Hue—10YR to 5Y or neutral
Value—4 to 6
Chroma—2 or less
Texture—silt loam or loam

Cg horizon:
Hue—10YR to 5Y or neutral
Value—4 to 7
Chroma—2 or less
Texture—silt loam, loam, silty clay loam, or sandy loam in the fine-earth fraction

Paddyknob Series

Physiographic province: Valley and Ridge
Landform: Mountains on uplands
Parent material: Residuum weathered from sandstone interbedded with shale and siltstone
Drainage class: Somewhat excessively drained
Slowest saturated hydraulic conductivity: High
Depth class: Moderately deep
Slope range: 8 to 35 percent

Associated Soils

- Mandy soils, which have more silt and less sand than the Paddyknob soils; on similar landforms

Taxonomic Classification

Loamy-skeletal, siliceous, superactive, frigid Typic Dystrudepts

Typical Pedon

Paddyknob very channery loam; in Bath County, Virginia; in a wooded area, about 1,800 feet and 270 degrees west of the intersection of National Forest Service Roads 55 and 636, about 4,000 feet and 60 degrees northeast of the intersection of National Forest Service Roads 55 and 141; Paddy Knob, West Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 38 degrees 15 minutes 59.00 seconds N. and long. 79 degrees 47 minutes 55.20 seconds W.

Oi—0 to 1 inch; slightly decomposed plant material.
A—1 to 3 inches; very dark grayish brown (10YR 3/2) very channery loam; weak fine granular structure; friable, nonsticky, nonplastic; 35 percent angular sandstone channers; extremely acid; clear smooth boundary.
BA—3 to 6 inches; dark yellowish brown (10YR 4/4) very channery loam; weak fine subangular blocky structure; friable, nonsticky, nonplastic; 35 percent angular sandstone channers; extremely acid; clear smooth boundary.
Bw—6 to 26 inches; dark yellowish brown (10YR 4/6) very channery sandy loam; weak fine subangular blocky structure; friable, slightly sticky, nonplastic; 45 percent angular sandstone channers; very strongly acid; abrupt wavy boundary.
R—26 inches; sandstone bedrock.

Range in Characteristics

Solum thickness: 20 to 40 inches
Depth to bedrock: 20 to 40 inches; bedrock is hard sandstone and, in places, it is interbedded with shale or siltstone
Reaction: Extremely acid to strongly acid
Rock fragments (content, size): 35 to 55 percent in the A horizon, 15 to 55 percent in the E horizon, 20 to 60 percent in the BE, BA and Bw horizons, and 40 to 90 percent in the BC and C horizons; channers, gravel, cobbles, or flagstones

A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 4
Texture—loam in the fine-earth fraction

E horizon (if it occurs):
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture—sandy loam, fine sandy loam, or loam in the fine-earth fraction

BE or BA horizon (if it occurs):
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture—sandy loam, fine sandy loam, or loam in the fine-earth fraction

Bw horizon:
Hue—7.5YR or 10YR
Value—4 to 7
Chroma—4 to 8
Texture—sandy loam, fine sandy loam, or loam in the fine-earth fraction

BC or C horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 6
Texture—loamy sandy, sandy loam, fine sandy loam, or loam in the fine-earth fraction

Poplimento Series

Physiographic province: Valley and Ridge
Landform: Hills and mountains on uplands
Parent material: Residuum weathered from limestone and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 8 to 35 percent

Associated Soils

- Berks soils, which are moderately deep, have a loamy-skeletal particle-size, and formed in residuum weathered from shale; on summits, shoulders, and backslopes
- Bland and Carbo soils, which are moderately deep and formed in residuum weathered from limestone; on landforms similar to those of the Poplimento soils

- Oriskany soils, which have a loamy-skeletal particle size; on footslopes and adjacent to drainageways
- Westmoreland soils, which are deep to bedrock; on landforms similar to those of the Poplimento soils

Taxonomic Classification

Fine, mixed, subactive, mesic Ultic Hapludalfs

Typical Pedon

Poplimento silty clay loam; in Alleghany County, Virginia; in a roadcut, approximately 5,650 feet south and 16 degrees west of the intersection of Highways VA-618 and VA-616 near Blue Spring Creek; Strom, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 40 minutes 25.00 seconds N. and long. 79 degrees 59 minutes 51.00 seconds W.

Ap—0 to 5 inches; dark yellowish brown (10YR 4/4) silty clay loam; strong fine granular structure; very friable, moderately sticky, slightly plastic; many very fine and fine and common medium roots; 1 percent shale channers; moderately acid; abrupt smooth boundary.

Bt1—5 to 20 inches; yellowish red (5YR 5/8) silty clay; strong medium subangular blocky structure; friable, very sticky, very plastic; common very fine, fine, and medium roots; common distinct clay films on faces of peds; 1 percent shale channers; strongly acid; gradual smooth boundary.

Bt2—20 to 35 inches; yellowish red (5YR 5/8) silty clay; many fine yellow (10YR 7/8) lithochromic mottles; moderate medium subangular blocky structure; friable, very sticky, very plastic; few very fine, fine, and medium roots; common distinct clay films on faces of peds; 2 percent shale channers; very strongly acid; gradual smooth boundary.

BC1—35 to 50 inches; 50 percent yellowish red (5YR 5/6) and 50 percent brownish yellow (10YR 6/8) silty clay loam; moderate medium subangular blocky structure; friable, moderately sticky, moderately plastic; few very fine and fine roots; 10 percent shale channers; very strongly acid; diffuse smooth boundary.

BC2—50 to 60 inches; 50 percent brownish yellow (10YR 6/8) and 50 percent yellowish red (5YR 5/6) channery silty clay loam; weak medium subangular blocky structure; firm, moderately sticky, moderately plastic; few very fine and fine roots; 20 percent shale channers; moderately acid.

Range in Characteristics

Solum thickness: More than 40 inches
Depth to bedrock: More than 60 inches
Reaction: Very strongly acid to slightly acid, except in limed areas (pH 4.5 to 6.5)
Rock fragments (content, size): 0 to 15 percent in the A and BA horizons and the upper part of the Bt horizon and 0 to 55 percent in the lower part of the Bt horizon and in the BC and C horizons; mostly channers

A or Ap horizon:
Hue—10YR or 7.5YR
Value—3 to 5
Chroma—2 to 6
Texture—silty clay loam

BA horizon (if it occurs):
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—3 to 8
Texture—silt loam, silty clay loam, or loam

Bt horizon:
Hue—10YR to 5YR
Value—4 to 6
Chroma—4 to 8
Texture—silty clay loam, silty clay, or clay in the fine-earth fraction

BC or C horizon:
Hue—10YR to 5YR
Value—4 to 6
Chroma—4 to 8
Texture—silty clay loam or silty clay in the fine-earth fraction

Ramsey Series

Physiographic province: Valley and Ridge
Landform: Mountains on uplands
Parent material: Loamy residuum weathered from sandstone
Drainage class: Somewhat excessively drained
Slowest saturated hydraulic conductivity: High
Depth class: Shallow
Slope range: 35 to 70 percent

Associated Soils

- Calvin soils, which are moderately deep to bedrock and have a loamy-skeletal particle size; on landforms similar to those of the Ramsey soils
- Lily soils, which are moderately deep to bedrock and have a fine-loamy particle size; on landforms similar to those of the Ramsey soils
- Oriskany soils, which are very deep to bedrock and have a loamy-skeletal particle size; at the base of slopes
- Rough soils, which are very shallow to bedrock; on landforms similar to those of the Ramsey soils
- Wallen soils, which are moderately deep to bedrock and have a loamy-skeletal particle size; on landforms similar to those of the Ramsey soils

Taxonomic Classification

Loamy, siliceous, subactive, mesic Lithic Dystrudepts

Typical Pedon

Ramsey sandy loam in an area of Ramsey-Rock outcrop complex, 35 to 70 percent slopes; in Russell County, Virginia; in woodland on a northeast aspect at 2,860 feet in elevation, about 400 feet west of the intersection of Highway VA-612 and the Russell-Washington County line at the top of Clinch Mountain; Mendota, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 43 minutes 42.00 seconds N. and long. 82 degrees 18 minutes 15.00 seconds W.

Oe—0 to 2 inches; moderately decomposed plant material.
A—2 to 5 inches; very dark grayish brown (10YR 3/2) sandy loam; weak fine granular structure; friable, nonsticky, nonplastic; many very fine roots; 2 percent subangular sandstone gravel; very strongly acid; abrupt smooth boundary.
E—5 to 9 inches; brown (10YR 4/3) sandy loam; weak fine granular structure; friable, nonsticky, nonplastic; few very fine roots; 5 percent subangular sandstone gravel; very strongly acid; clear wavy boundary.
Bw—9 to 17 inches; yellowish brown (10YR 5/6) sandy loam; weak fine subangular

blocky structure; friable, nonsticky, nonplastic; few organic stains; 5 percent subangular sandstone gravel; very strongly acid; abrupt wavy boundary.
R—17 inches; sandstone bedrock.

Range in Characteristics

Solum thickness: 7 to 20 inches
Depth to bedrock: 7 to 20 inches
Reaction: Very strongly acid to slightly acid
Rock fragments (content, type, size): 0 to 15 percent in the A horizon and 5 to 35 percent in the E, Bw, and C horizons; mostly sandstone gravel with some cobbles and stones

A horizon:
Hue—10YR
Value—3 to 5
Chroma—1 to 4
Texture—sandy loam

E horizon:
Hue—10YR
Value—4 to 6
Chroma—2 to 4
Texture—loam or sandy loam in the fine-earth fraction

Bw horizon:
Hue—10YR
Value—4 to 6
Chroma—3 to 8
Texture—loam or sandy loam in the fine-earth fraction

C horizon (if it occurs):
Hue—10YR
Value—4 to 6
Chroma—3 to 8
Texture—loam, sandy loam, or loamy sand in the fine-earth fraction

Rough Series

Physiographic province: Valley and Ridge
Landform: Hills and mountains on uplands
Parent material: Channery, loamy residuum weathered from shale and siltstone
Drainage class: Somewhat excessively drained
Slowest saturated hydraulic conductivity: High
Depth class: Very shallow
Slope range: 35 to 80 percent

Associated Soils

- Berks soils, which are moderately deep to bedrock and are yellower than the Rough soils; on similar landforms
- Calvin soils, which are moderately deep to bedrock; on landforms similar to those of the Rough soils
- Ramsey soils, which are shallow to bedrock and have a loamy particle size; on mountains on uplands
- Westmoreland soils, which are deep to bedrock and have a fine-loamy particle size; on landforms similar to those of the Rough soils

Taxonomic Classification

Loamy, mixed, active, acid, mesic Lithic Udorthents

Typical Pedon

Rough channery loam in an area of Calvin-Rough complex, 35 to 80 percent slopes, 35 to 80 percent slopes, very rocky; in Russell County, Virginia; on a forested backslope, 800 feet north-northeast of the point where Highway VA-80 crosses over the top of Clinch Mountain at Hayters Gap; Hayters Gap, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 51 minutes 59.00 seconds N. and long. 81 degrees 56 minutes 44.00 seconds W.

Oe—0 to 1 inch; moderately decomposed plant material.
A—1 to 2 inches; dark brown (7.5YR 3/2) channery loam; weak fine granular structure; friable, nonsticky, nonplastic; common medium and many very fine roots; many very fine interstitial pores; 20 percent angular siltstone channers; very strongly acid; abrupt smooth boundary.
Bw—2 to 8 inches; dark reddish brown (2.5YR 3/3) very channery loam; weak medium subangular blocky structure; friable, nonsticky, nonplastic; common fine and medium roots; many very fine interstitial pores; 40 percent angular siltstone channers; very strongly acid; clear wavy boundary.
C—8 to 10 inches; dark reddish brown (2.5YR 3/3) extremely channery loam; massive; friable, nonsticky, nonplastic; few very fine roots; many very fine interstitial pores; 65 percent angular siltstone channers; very strongly acid; abrupt wavy boundary.
R—10 inches; shale bedrock.

Range in Characteristics

Solum thickness: 0 to 8 inches
Depth to bedrock: Less than 10 inches; typically ranging from 4 to 9 inches
Reaction: Extremely acid or very strongly acid
Rock fragments (content, type): 15 to 35 percent in the A horizon, 35 to 60 percent in the Bw horizon, and 60 to 80 percent in the C horizon; shale, siltstone, and sandstone

A horizon:
Hue—7.5YR
Value—2 to 4
Chroma—2 or 3
Texture—loam in the fine-earth fraction

Bw horizon:
Hue—2.5YR or 5YR
Value—3 or 4
Chroma—3 or 4
Texture—silt loam or loam in the fine-earth fraction

C horizon:
Hue—2.5YR or 5YR
Value—3 or 4
Chroma—3 or 4
Texture—silt loam or loam in the fine-earth fraction

Sewell Series

Physiographic province: Appalachian Plateau
Landform: Ridges and spurs of mountains that have been surface mined for coal

Parent material: Mine spoil or earthy fill derived from sandstone and small amounts of siltstone, shale, and coal
Drainage class: Somewhat excessively drained
Slowest saturated hydraulic conductivity: High
Depth class: Very deep
Slope range: 0 to 80 percent

Associated Soils

- Cedarcreek soils, which formed in mine spoil not dominated by sandstone fragments, are acid in reaction, have more clay and silt than the Sewell soils, and have less sand; in similar positions
- Fiveblock soils, which formed in mine spoil dominated by sandstone fragments and are nonacid in reaction; in positions similar to those of the Sewell soils
- Kaymine soils, which formed in mine spoil not dominated by sandstone fragments and are nonacid in reaction; in positions similar to those of the Sewell soils
- Stonecoal soils, which formed in nonacid regolith of material from deep-mined coal, are nonacid in reaction, are very deep to bedrock, and have more carbolithic rock fragments than the Sewell soils; in similar positions and on the higher landscape summits and shoulders

Taxonomic Classification

Loamy-skeletal, mixed, semiactive, acid, mesic Typic Udorthents

Typical Pedon

Sewell channery sandy loam; in Wyoming County, West Virginia; in Barkers Ridge District, about 3,000 yards south-southeast of Corrine and 700 yards southwest of Sand Gap; Rhodell, West Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 32 minutes 53.00 seconds N. and long. 81 degrees 20 minutes 47.00 seconds W.

A—0 to 4 inches; yellowish brown (10YR 5/6) channery sandy loam; weak fine granular structure; very friable; many fine and medium roots; 3 percent subangular siltstone channers, 5 percent subangular sandstone boulders, 7 percent subangular sandstone stones, and 15 percent subangular sandstone channers; very strongly acid; gradual wavy boundary.

C1—4 to 9 inches; dark yellowish brown (10YR 4/6) very channery sandy loam; common gray (10YR 6/1), common yellow (2.5Y 7/6), and common red (2.5YR 5/6) lithochromic mottles; massive; friable; common fine roots; 3 percent subangular siltstone channers, 5 percent subangular sandstone boulders, 12 percent subangular sandstone stones, and 30 percent subangular sandstone channers; strongly acid; gradual wavy boundary.

C2—9 to 29 inches; yellowish brown (10YR 5/4) extremely channery sandy loam; common gray (10YR 6/1), common yellow (2.5Y 7/6), and common red (2.5YR 5/6) lithochromic mottles; massive; friable; few fine and medium roots; 7 percent subangular siltstone channers, 8 percent subangular sandstone boulders, 10 percent subangular sandstone stones, and 40 percent subangular sandstone channers; strongly acid; gradual wavy boundary.

C3—29 to 65 inches; yellowish brown (10YR 5/4) extremely channery sandy loam; common gray (10YR 6/1), common yellow (2.5Y 7/6), and common red (2.5YR 5/6) lithochromic mottles; massive; friable; 8 percent subangular sandstone boulders, 8 percent subangular siltstone channers, 9 percent subangular sandstone stones, and 50 percent subangular sandstone channers; strongly acid.

Range in Characteristics

Solum thickness: 2 to 10 inches

Depth to bedrock: More than 60 inches
Reaction: Extremely acid to strongly acid
Rock fragments (content, type, size): 15 to 35 percent, by volume, in the A horizon and 35 to 80 percent in the C horizon; mostly sandstone with small amounts of siltstone, shale, and coal; mostly channers but including stones and boulders

A horizon:
Hue—10YR
Value—3 to 5
Chroma—2 to 6
Texture—sandy in the fine-earth fraction

C horizon:
Hue—7.5YR or 10YR
Value—3 to 6
Chroma—1 to 6
Texture—sandy loam, fine sandy loam, or loam in the fine-earth fraction

Shelocta Series

Physiographic province: Appalachian Plateau
Landform: Base of slopes of hills and mountains and sideslopes of hills and mountains
Parent material: Fine-loamy colluvium derived from sandstone and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 35 to 80 percent

Associated Soils

- Gilpin soils, which are moderately deep to shale bedrock; on mountains on uplands
- Kaymine and Cedarcreek, which are mine soil materials and have a loamy-skeletal particle size; on surface mines
- Marrowbone soils, which are moderately deep to sandstone bedrock; on mountains on uplands
- Highsplint soils, which formed in colluvium derived from sandstone and shale, are very deep to bedrock, and have more fragments than the Shelocta soils; on similar landscapes
- Matewan soils, which formed in residuum weathered from sandstone, are moderately deep to bedrock, have more sand and less silt and clay than the Shelocta soils, and have more fragments; on backslopes and the higher summits and shoulders

Taxonomic Classification

Fine-loamy, mixed, active, mesic Typic Hapludults

Typical Pedon

Shelocta silt loam; in Scott County, Virginia; in woodland on a north-northwest aspect at 2,300 feet in elevation, about 1.8 miles north-northwest of the intersection of Highways VA-653 and VA-619, about 2.24 miles south-southwest of the intersection of Highway VA-619 and Forest Service Road 2645; Duffield, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 50 minutes 4.00 seconds N. and long. 82 degrees 37 minutes 39.00 seconds W.

Oe—0 to 1 inch; moderately decomposed plant material.

A—1 to 3 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable, slightly sticky, slightly plastic; few medium and many very fine roots; common medium pores; 5 percent subrounded sandstone gravel; very strongly acid; abrupt smooth boundary.

BA—3 to 10 inches; yellowish brown (10YR 5/4) silt loam; weak fine subangular blocky structure; very friable, slightly sticky, slightly plastic; few fine and common very fine roots; common medium pores; many medium prominent black (10YR 2/1) iron-manganese concretions on faces of peds; 5 percent subrounded sandstone gravel; very strongly acid; clear smooth boundary.

Bt1—10 to 18 inches; yellowish brown (10YR 5/6) silty clay loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; few coarse and common very fine roots; common fine and medium pores; common distinct clay films on faces of peds; many medium prominent black (10YR 2/1) iron-manganese concretions on faces of peds; 5 percent subrounded sandstone gravel; very strongly acid; clear wavy boundary.

Bt2—18 to 37 inches; yellowish brown (10YR 5/6) gravelly silty clay loam; weak fine and medium subangular blocky structure; friable, slightly sticky, moderately plastic; few fine and few very coarse roots; common fine pores; many distinct clay films on faces of peds; few medium prominent black (10YR 2/1) iron-manganese concretions on faces of peds; 20 percent subrounded sandstone gravel; very strongly acid; gradual wavy boundary.

Bt3—37 to 55 inches; strong brown (7.5YR 5/6) channery silty clay loam; weak coarse subangular blocky and weak fine and medium subangular blocky structure; friable, slightly sticky, moderately plastic; few coarse roots; common fine pores; many distinct clay films on faces of peds; few fine prominent black (10YR 2/1) iron-manganese concretions on faces of peds; 20 percent angular shale channers; very strongly acid; clear smooth boundary.

2C—55 to 70 inches; strong brown (7.5YR 5/8) extremely channery silty clay; massive; friable, slightly sticky, moderately plastic; few fine prominent black (10YR 2/1) iron-manganese concretions on bottom of rock fragments and on faces of peds; 65 percent angular shale channers; very strongly acid.

Range in Characteristics

Solum thickness: 40 to more than 60 inches
Depth to bedrock: More than 60 inches
Reaction: Extremely acid to strongly acid
Content of rock fragments: 2 to 35 percent in the A horizon, 5 to 50 percent in individual B horizons, and 15 to 70 percent in the 2B or C horizon

A horizon:
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—1 to 4
Texture—silt loam or loam

BA horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 6
Texture—silt loam, silty clay loam, or loam in the fine-earth fraction

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture—silty clay loam, silt loam, or loam in the fine-earth fraction

2B horizon (if it occurs) and 2C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture—typically silty clay or clay in the fine-earth fraction; including silt loam, loam, silty clay loam, or clay loam in some pedons

Stonecoal Series

Physiographic province: Appalachian Plateau
Landform: Ridges and spurs of mountains and hills that are used as coal-mine refuse piles
Parent material: Nonacid regolith of waste materials from deep-mined coal; mixtures of partially weathered fine earth and fragments of bedrock which consist of nonacid carboliths, sandstone, siltstone, and shale
Drainage class: Somewhat excessively drained
Slowest saturated hydraulic conductivity: High
Depth class: Very deep
Slope range: 0 to 80 percent

Associated Soils

- Berks, Gilpin, Matewan, and Marrowbone soils, which formed in residuum weathered from sandstone, siltstone, or shale and are moderately deep to bedrock; on adjacent landforms that have not been disturbed by coal-mining operations
- Shelocta and Highsplint soils, which formed in colluvium derived from sandstone and shale and are very deep to bedrock; on adjacent landforms that have not been disturbed by coal-mining operations
- Cedarcreek soils, which formed in mine spoil with sandstone, shale, siltstone, and fewer coal fragments and are more acid in reaction than the Stonecoal soils; on ridges, spur ridges, backslopes, and footslopes
- Fiveblock soils, which formed in mine spoil dominated by sandstone material and have more sand, less silt, and fewer coal fragments than the Stonecoal soils; on summits
- Kaymine soils, which formed in mine spoil with sandstone, shale, siltstone, and, to a lesser extent, coal fragments; on ridges, spur ridges, backslopes, and footslopes
- Sewell soils, which formed in mine spoil dominated by sandstone fragments, are more acid in reaction than the Stonecoal soils, and have more sand and less silt; on summits

Taxonomic Classification

Loamy-skeletal, mixed, semiactive, nonacid, mesic Typic Udorthents

Typical Pedon

Stonecoal extremely channery sandy loam, 0 to 80 percent slopes; in Russell County, Virginia; in an area of refuse on a southeast aspect, about 1.2 miles north-northeast of Highways VA615 and VA616; Carbo, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 57 minutes 30.00 seconds N. and long. 82 degrees 11 minutes 35.00 seconds W.

C1—0 to 31 inches; black (10YR 2/1) extremely channery sandy loam; massive; firm, slightly sticky, nonplastic; 2 percent subangular coal gravel, 3 percent subangular sandstone flagstones, 10 percent subangular sandstone channers, 30 percent subangular siltstone channers, and 35 percent subangular shale channers; slightly alkaline; gradual wavy boundary.

C2—31 to 39 inches; black (10YR 2/1) extremely channery sandy loam; massive; firm, slightly sticky, nonplastic; 2 percent subangular coal gravel, 3 percent subangular sandstone flagstones, 5 percent subangular sandstone channers, 30 percent subangular siltstone channers, and 40 percent subangular shale channers; moderately alkaline; clear wavy boundary.

C3—39 to 68 inches; black (10YR 2/1) extremely channery loamy sand; massive; firm, nonsticky, nonplastic; 2 percent subangular coal gravel, 3 percent subangular sandstone channers, 35 percent subangular siltstone channers, and 40 percent subangular shale channers; moderately alkaline.

Range in Characteristics

Solum thickness: 0 to 30 inches
Depth to bedrock: More than 60 inches
Reaction: Moderately acid to strongly alkaline, except where surface layers have been limed
Rock fragments (content, type, size): 15 to 80 percent in the A and AC horizons and 35 to 80 percent in the C horizon; mostly hard shale channers and siltstone with small amounts of sandstone and coal
Other characteristics: Some pedons have an A or AC horizon that is as much as 20 inches thick and that was formed by stockpiling native surficial soil and then spreading this material over the land surface

A horizon (if it occurs):
Hue—10YR
Value—4 to 6
Chroma—4 to 8
Texture—clay loam, silty clay loam, or loam in the fine-earth fraction

AC horizon (if it occurs):
Hue—10YR
Value—4 to 6
Chroma—4 to 8
Texture—clay loam, silty clay loam, or loam in the fine-earth fraction

C horizon:
Hue—neutral or 10YR
Value—2 or 3
Chroma—0 to 2
Texture—sandy loam, loamy sand, or fine sandy loam in the fine-earth fraction; including thin layers or pockets of loam

Tumbling Series

Physiographic province: Valley and Ridge
Landform: Base of slopes of hills and mountains, valleys, and lower side slopes of hills and mountains
Parent material: Clayey colluvium derived from sandstone and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 8 to 45 percent

Associated Soils

- Berks, Carbo, and Gilpin soils, which are moderately deep to bedrock; on hills and mountains on uplands

- Oriskany soils, which have a loamy-skeletal particle size; on landforms similar to those of the Tumbling soils

Taxonomic Classification

Fine, kaolinitic, mesic Typic Paleudults

Typical Pedon

Tumbling loam; in Washington County, Virginia; in a pasture, 1.0 mile northeast of the intersection of Highways VA-687 and VA-689; Brumley, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 48 minutes 45.00 seconds N. and long. 82 degrees 0 minutes 52.00 seconds W.

Ap—0 to 6 inches; brown (10YR 4/3) loam; weak fine granular structure; friable, slightly sticky, slightly plastic; many fine and few medium roots; few fine pores; 2 percent subrounded sandstone cobbles; moderately acid; abrupt smooth boundary.

Bt1—6 to 19 inches; strong brown (7.5YR 5/6) clay loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine and few medium roots; common fine pores; few faint clay films between sand grains; 2 percent subrounded sandstone cobbles; strongly acid; gradual smooth boundary.

Bt2—19 to 47 inches; yellowish red (5YR 5/6) clay; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine roots; many fine pores; few faint clay films on faces of peds; 5 percent subrounded sandstone cobbles; strongly acid; gradual smooth boundary.

Bt3—47 to 65 inches; red (2.5YR 4/6) cobbly clay; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine roots; many fine pores; few faint clay films on faces of peds; 25 percent subrounded sandstone cobbles; strongly acid.

Range in Characteristics

Solum thickness: More than 60 inches
Depth to bedrock: More than 60 inches
Reaction: Moderately acid to very strongly acid in the A horizon and very strongly acid or strongly acid in the B horizon
Content of rock fragments: 0 to 15 percent in the A horizon and 0 to 35 percent in the B horizon

Ap horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 or 4
Texture—loam

A horizon (if it occurs):
Hue—7.5YR or 10YR
Value—2 or 3
Chroma—2 or 3
Texture—loam

Bt horizon:
Hue—2.5YR to 10YR
Value—4 or 5
Chroma—4 to 8
Texture—clay, silty clay loam, or clay loam in the fine-earth fraction

Udorthents

Physiographic province: Valley and Ridges and Appalachian Plateau
Landform: Cut and fill areas
Parent material: Fill material
Drainage class: Variable
Slowest saturated hydraulic conductivity: Unspecified
Depth class: Variable
Slope range: 0 to 80 percent

Associated Soils

- Gilpin and Berks soils, which formed in residuum weathered from siltstone and shale, are well drained, and are moderately deep to bedrock
- Frederick soils, which formed in residuum weathered from limestone and are very deep to bedrock
- Carbo soils, which formed in residuum weathered from limestone and are moderately deep to bedrock

Typical Pedon

The properties and characteristics of Udorthents vary to the extent that a typical profile cannot be given. Udorthents formed when soils were disturbed by land-leveling, excavation, or filling. They consist of soil material with variable textures and colors and varying amounts of rock fragments. Depth to bedrock varies from a few inches to more than 5 feet. Areas range from slightly compacted to severely compacted. Unvegetated areas are susceptible to severe erosion. Drainage is variable.

Wallen Series

Physiographic province: Valley and Ridge
Landform: Mountains on uplands
Parent material: Residuum weathered from acid sandstone interbedded with shale and siltstone
Drainage class: Somewhat excessively drained
Slowest saturated hydraulic conductivity: High
Depth class: Moderately deep
Slope range: 15 to 80 percent

Associated Soils

- Calvin soils, which formed in residuum derived from shale and sandstone and are redder and have more silt and less sand than the Wallen soils; on similar landforms
- Lily soils, which have fewer rock fragments than the Wallen soils; on similar landforms
- Oriskany soils, which formed in colluvium derived from sandstone and shale and are very deep; on footslopes
- Ramsey soils, which are shallow to sandstone bedrock; on landforms similar to those of the Wallen soils
- Weikert soils, which formed in residuum derived from shale, are shallow, and have more silt and less sand than the Wallen soils; on similar landforms

Taxonomic Classification

Loamy-skeletal, siliceous, active, mesic Typic Dystrudepts

Typical Pedon

Wallen channery sandy loam; in Tazewell County, Virginia; in woodland, about 10.5

miles southwest of Tazewell, 2.7 miles northwest of the county line, 125 feet north of Highway VA-91 on Clinch Mountain; Broadford, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 59 minutes 9.00 seconds N. and long. 81 degrees 39 minutes 3.00 seconds W.

Oi—1 inch to 0; partly decomposed and undecomposed loose leaves.
A—0 to 4 inches; very dark brown (10YR 2/2) channery sandy loam; weak fine granular structure; friable; many very fine roots; many very fine pores; 20 percent angular sandstone channers; strongly acid; abrupt wavy boundary.
Bw1—4 to 12 inches; yellowish brown (10YR 5/6) very channery sandy loam; weak fine subangular blocky structure; very friable; many medium roots; many very fine pores; 40 percent angular sandstone channers; very strongly acid; clear wavy boundary.
Bw2—12 to 22 inches; yellowish brown (10YR 5/6) very channery sandy loam; weak fine subangular blocky structure; very friable; common medium and common very fine roots; many very fine pores; 15 percent angular sandstone flagstones and 40 percent angular sandstone channers; very strongly acid; gradual wavy boundary.
C—22 to 24 inches; yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) extremely channery sandy loam; single grain; loose; few fine roots; many very fine pores; 20 percent angular sandstone flagstones and 45 percent angular sandstone channers; very strongly acid; clear wavy boundary.
R—24 inches; sandstone bedrock.

Range in Characteristics

Solum thickness: 20 to 40 inches
Depth to bedrock: 20 to 40 inches
Reaction: Very strongly acid to moderately acid
Rock fragments (content, type): 15 to 35 percent in the A horizon, 35 to 60 percent in the Bw horizon, and 40 to 70 percent in the C horizon; mostly sandstone but including siltstone and shale

A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—sandy loam in the fine-earth fraction

Bw horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 6
Texture—sandy loam, fine sandy loam, or loam in the fine-earth fraction

C horizon:
Hue—7.5YR or 10YR
Value—5 or 6
Chroma—4 to 6
Texture—sandy loam or loamy sand in the fine-earth fraction

Watahala Series

Physiographic province: Valley and Ridge
Landform: Hills on uplands
Parent material: Gravelly residuum over clayey residuum weathered from cherty limestone
Drainage class: Well drained

Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 8 to 55 percent

Associated Soils

- Carbo soils, which are moderately deep to bedrock; on landforms similar to those of the Watahala soils
- Frederick soils, which have a fine particle-size and have fewer chert gravel in the soil than the Watahala soils; on similar landforms
- Marbie soils, which have a fine-loamy particle-size, have fewer chert gravel in the soil than the Watahala soils, and are moderately well drained; at the base of slopes
- Wyrick soils, which have a fine-loamy particle-size and have fewer chert gravel in the soil than the Watahala soils; at the base of slopes

Taxonomic Classification

Fine-loamy over clayey, siliceous over mixed, subactive, mesic Typic Paleudults

Typical Pedon

Watahala gravelly silt loam, 15 to 25 percent slopes; in Russell County, Virginia; in a pasture, 1,200 feet north of U.S. Highway 19, near Glade Spring; Elk Garden, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 58 minutes 45.40 seconds N. and long. 81 degrees 54 minutes 58.30 seconds W.

Ap—0 to 4 inches; very dark grayish brown (10YR 3/2) gravelly silt loam; weak fine granular structure; very friable, nonsticky, nonplastic; many very fine roots; 30 percent angular chert gravel; very strongly acid; clear smooth boundary.

E—4 to 15 inches; yellowish brown (10YR 5/4) gravelly silt loam; weak fine subangular blocky structure; very friable, slightly sticky, slightly plastic; many very fine roots; 20 percent angular chert gravel; very strongly acid; clear smooth boundary.

BE—15 to 28 inches; yellowish brown (10YR 5/6) very gravelly loam; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; many very fine roots; 40 percent angular chert gravel; very strongly acid; abrupt wavy boundary.

Bt1—28 to 42 inches; strong brown (7.5YR 5/6) gravelly silty clay loam; common fine distinct yellowish red (5YR 5/6) lithochromic mottles; weak medium subangular blocky structure; friable, moderately sticky, moderately plastic; few very fine roots; few clay films on faces of peds; 25 percent angular chert gravel; very strongly acid; abrupt wavy boundary.

2Bt2—42 to 60 inches; yellowish red (5YR 5/6) silty clay; common fine distinct strong brown (7.5YR 5/6) lithochromic mottles; moderate medium subangular blocky structure; friable, moderately sticky, moderately plastic; few very fine roots; few clay films on faces of peds; 2 percent angular chert gravel; very strongly acid.

Range in Characteristics

Solum thickness: More than 60 inches
Depth to bedrock: More than 60 inches
Reaction: Extremely acid to strongly acid in the upper part of the solum and very strongly acid or strongly acid in the 2Bt horizon
Rock fragments (content, type, size): 15 to 35 percent in the A horizon, 10 to 45 percent in the other individual horizons above the 2Bt horizon, and 0 to 35 percent in the 2Bt horizon; the control section averages less than 35 percent; mostly chert but including limestone and sandstone; mostly gravel or cobbles

A horizon (if it occurs):
Hue—10YR

Value—3 or 4
Chroma—2 to 4
Texture—silt loam in the fine-earth fraction

Ap horizon:
Hue—10YR
Value—3 or 4
Chroma—2 or 3
Texture—silt loam in the fine-earth fraction

E horizon:
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—2 to 4
Texture—loam or silt loam in the fine-earth fraction

BE horizon:
Hue—10YR
Value—5 or 6
Chroma—4 to 6
Texture—loam or silt loam in the fine-earth fraction

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6
Chroma—6 to 8
Texture—loam, silt loam, clay loam, or silty clay loam in the fine-earth fraction

2Bt horizon:
Hue—2.5YR to 7.5YR
Value—4 to 6
Chroma—6 to 8
Texture—clay or silty clay in the fine-earth fraction

Weikert Series

Physiographic province: Valley and Ridge
Landform: Hills on uplands
Parent material: Channery, loamy residuum weathered from shale and siltstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: High
Depth class: Shallow
Slope range: 8 to 70 percent

Associated Soils

- Berks soils, which are moderately deep to bedrock; on landforms similar to those of the Weikert soils
- Tumbling soils, which are very deep to bedrock and have a fine particle size; at the base of slopes
- Wallen soils, which have more sand and less silt than the Weikert soils and are moderately deep to bedrock; on mountains

Taxonomic Classification

Loamy-skeletal, mixed, active, mesic Lithic Dystrudepts

Typical Pedon

Weikert channery silt loam; in Scott County, Virginia; in an area of pasture on a west-southwest aspect, about 0.8 mile west-northwest of the intersection of Highways VA-638 and VA-604, about 0.76 mile northeast of the intersection of Highways VA-603 and VA-604; Duffield, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 42 minutes 3.00 seconds N. and long. 82 degrees 51 minutes 23.00 seconds W.

A—0 to 2 inches; very dark grayish brown (10YR 3/2) channery silt loam; moderate fine granular structure; friable, slightly sticky, slightly plastic; common very fine roots; 20 percent angular shale channers; moderately acid; abrupt smooth boundary.

Bw—2 to 8 inches; brown (10YR 4/3) very channery silt loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; common very fine roots; 40 percent angular shale channers; moderately acid; clear wavy boundary.

C—8 to 14 inches; dark yellowish brown (10YR 4/4) extremely channery silt loam; massive; friable, slightly sticky, slightly plastic; few very fine roots; 80 percent angular shale channers; strongly acid; clear wavy boundary.

R—14 inches; shale bedrock.

Range in Characteristics

Solum thickness: 8 to 20 inches
Depth to bedrock: 10 to 20 inches
Reaction: Moderately acid to very strongly acid in the A horizon and moderately acid to extremely acid in the B and C horizons
Content of rock fragments: 15 to 35 percent in the A horizon, 35 to 60 percent in the B horizon, and 60 to 85 percent in the C horizon

A horizon:
Hue—10YR
Value—3 or 4
Chroma—2 to 4
Texture—silt loam in the fine-earth fraction

Bw horizon:
Hue—10YR
Value—4 to 6
Chroma—3 to 6
Texture—silt loam in the fine-earth fraction

C horizon:
Hue—10YR
Value—4 to 6
Chroma—3 to 8
Texture—silt loam in the fine-earth fraction

Westmoreland Series

Physiographic province: Valley and Ridge
Landform: Hills and mountains on uplands
Parent material: Fine-loamy residuum weathered from limestone and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Deep
Slope range: 8 to 70 percent

Associated Soils

- Berks soils, which are moderately deep and have a loamy-skeletal particle size; on landforms similar to those of the Westmoreland soils
- Calvin soils, which are moderately deep, have a loamy-skeletal particle-size, and are redder than the Westmoreland soils; on similar landforms
- Carbo and Bland soils, which are moderately deep and have a very fine and fine particle-size, respectively; on hills on uplands
- Oriskany soils, which are very deep and have many stones on the surface; at the base of slopes
- Poplimento soils, which are very deep and have a fine particle size; on landforms similar to those of the Westmoreland soils
- Rough soils, which are shallow; on landforms similar to those of the Westmoreland soils

Taxonomic Classification

Fine-loamy, mixed, active, mesic Ultic Hapludalfs

Typical Pedon

Westmoreland silt loam in an area of Berks-Westmoreland complex, 35 to 55 percent slopes; in Russell County, Virginia; in a pasture, 2 miles northwest of the intersection of Highways US-19 and VA-80 at Rosedale, 2 miles southwest of the intersection of Highway VA-80 and the Clinch River; Elk Garden, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 58 minutes 14.50 seconds N. and long. 81 degrees 57 minutes 51.00 seconds W.

Ap—0 to 6 inches; dark brown (10YR 3/3) silt loam; weak fine granular structure; friable, nonsticky, nonplastic; many fine and common very fine roots; many very fine and fine interstitial pores; 2 percent angular shale channers; moderately acid; abrupt smooth boundary.

Bt1—6 to 23 inches; yellowish brown (10YR 5/6) silty clay loam; moderate fine subangular blocky structure; friable, slightly sticky, slightly plastic; common very fine and fine roots; common very fine and fine interstitial pores; common distinct clay films on faces of peds; 10 percent angular shale channers; strongly acid; gradual wavy boundary.

Bt2—23 to 36 inches; yellowish brown (10YR 5/6) channery silty clay loam; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine roots; common very fine and fine interstitial pores; common distinct clay films on faces of peds; 25 percent angular shale channers; strongly acid; gradual wavy boundary.

C—36 to 54 inches; yellowish brown (10YR 5/4) very channery silt loam; massive; friable, nonsticky, nonplastic; common very fine and fine interstitial pores; 45 percent angular shale channers; strongly acid; clear wavy boundary.

R—54 inches; shale bedrock.

Range in Characteristics

Solum thickness: 20 to 40 inches

Depth to bedrock: 40 to 60 inches

Reaction: Very strongly acid to moderately acid in the solum and strongly acid or moderately acid in the C horizon

Rock fragments (content, type, size): 2 to 15 percent in the A horizon, 2 to 30 percent in the Bt horizon, and 45 to 90 percent in the C horizon; mostly shale channers but including limestone channers

Ap horizon:

Hue—10YR

Value—3 to 5
Chroma—2 or 3
Texture—silt loam

A horizon (if it occurs):
Hue—10YR
Value—3 or 4
Chroma—2 or 3
Texture—silt loam, loam, or silty clay loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 to 8
Texture—silt loam or silty clay loam in the fine-earth fraction

C horizon:
Hue—7.5YR to 2.5Y
Value—4 or 5
Chroma—4 to 8
Texture—silt loam or silty clay loam in the fine-earth fraction

Wharton Series

Physiographic province: Appalachian Plateau
Landform: Ridges and spurs of mountains and hills
Parent material: Residuum weathered from shale and siltstone
Drainage class: Moderately well drained
Slowest saturated hydraulic conductivity: Moderately low
Depth class: Very deep
Slope range: 8 to 25 percent

Associated Soils

- Berks soils, which well drained, are moderately deep to bedrock, and have more fragments than the Wharton soils; on similar, steeper, and higher landscapes
- Gilpin soils, which are well drained and moderately deep to bedrock; on similar, steeper, and higher landscapes
- Marrowbone soils, which are well drained, are moderately deep to bedrock, and have more sand and less silt and clay than the Wharton soils; on similar, steeper, and higher landscapes

Taxonomic Classification

Fine-loamy, mixed, active, mesic Aquic Hapludults

Typical Pedon

Wharton silt loam; in Buchanan County, Virginia; in a field, about 0.2 mile northeast of Highway VA-83, about 0.45 mile east-northeast of the Buchanan-Dickenson County line, 0.625 mile south of Highway VA-608; Prater, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 12 minutes 37.00 seconds N. and long. 82 degrees 13 minutes 34.00 seconds W.

A—0 to 2 inches; yellowish brown (10YR 5/4) silt loam; weak fine granular structure; friable, slightly sticky, nonplastic; many very fine and fine roots; common very fine moderate-continuity tubular and irregular pores; 2 percent angular shale channers; strongly acid; abrupt wavy boundary.
BA—2 to 9 inches; yellowish brown (10YR 5/6) silt loam; many coarse distinct irregular

dark yellowish brown (10YR 4/4) lithochromic mottles; weak medium subangular blocky structure; friable, slightly sticky, nonplastic; common medium and common very fine roots; common very fine moderate-continuity tubular and irregular pores; 1 percent angular shale channers; very strongly acid; clear wavy boundary.

Bt1—9 to 17 inches; strong brown (7.5YR 5/6) silty clay loam; many coarse prominent irregular dark yellowish brown (10YR 4/4) lithochromic mottles; moderate medium subangular blocky structure; friable, moderately sticky, slightly plastic; few medium and few very fine roots; common very fine moderate-continuity tubular and irregular pores; common faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—17 to 35 inches; light yellowish brown (10YR 6/4) silty clay loam; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine roots; common very fine moderate-continuity tubular and common very fine moderate-continuity irregular pores; common faint clay films on faces of peds; common fine and medium prominent irregular light gray (10YR 7/1) iron depletions with sharp boundaries infused into matrix along faces of peds and many coarse prominent irregular strong brown (7.5YR 5/6) masses of oxidized iron with sharp boundaries infused into matrix along faces of peds; very strongly acid; gradual wavy boundary.

BC—35 to 55 inches; yellowish brown (10YR 5/6) silt loam; weak medium subangular blocky structure; friable, nonsticky, nonplastic; few very fine roots; common very fine moderate-continuity tubular and irregular pores; many medium prominent irregular light gray (10YR 7/1) iron depletions with sharp boundaries throughout and many medium distinct irregular strong brown (7.5YR 5/6) masses of oxidized iron with sharp boundaries throughout; 10 percent angular shale channers; very strongly acid; gradual wavy boundary.

C—55 to 65 inches; yellowish brown (10YR 5/6) silt loam that has pockets of silty clay loam; massive; friable, slightly sticky, nonplastic; common very fine moderate-continuity tubular and irregular pores; many medium prominent irregular light gray (10YR 7/1) iron depletions with sharp boundaries throughout and many fine prominent irregular yellowish red (5YR 5/6) masses of oxidized iron with sharp boundaries throughout; 10 percent angular shale channers; very strongly acid; abrupt wavy boundary.

R—65 inches; moderately hard shale bedrock.

Range in Characteristics

Solum thickness: 30 to 60 inches
Depth to bedrock: 40 to more than 72 inches
Reaction: Extremely acid to strongly acid throughout the profile, except in limed areas
Rock fragments (content, size, type): 0 to 10 percent in the A, BA, and Bt horizons, 5 to 40 percent in the BC horizon, and 10 to 50 percent in the C horizon; channers of mostly shale and some sandstone

Ap horizon (if it occurs):
Hue—10YR
Value—3 to 5
Chroma—3 or 4
Texture—silt loam

A horizon:
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture—silt loam or loam

BA horizon:
Hue—10YR
Value—5
Chroma—4 to 6
Texture—silt loam, loam, or silty clay loam

Bt horizon:
Hue—7.5YR to 2.5Y
Value—5 or 6
Chroma—4 to 6
Texture—silt loam, silty clay loam, or loam
Redoximorphic features—in shades of light gray, gray, brown, and red

BC horizon:
Hue—7.5YR or 2.5Y
Value—5 or 6
Chroma—4 to 6
Texture—silt loam or loam in the fine-earth fraction
Redoximorphic features—in shades of light gray, gray, brown, and red

C horizon:
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—silt loam, loam, fine sandy loam, or sandy loam in the fine-earth fraction; pockets of silty clay loam occur in some pedons
Redoximorphic features—in shades of light gray, gray, brown, and red

Wyrick Series

Physiographic province: Valley and Ridge
Landform: Base of slopes of hills and valleys
Parent material: Fine-loamy colluvium derived from limestone and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 3 to 15 percent

Associated Soils

- Carbo soils, which have a very fine particle-size and are moderately deep to bedrock; on hills on uplands
- Frederick soils, which have a fine particle size; on hills on uplands
- Marbie soils, which are moderately well drained; on landforms similar to those of the Wyrick soils
- Watahala soils, which have more chert gravel in the soil than the Wyrick soils; on hills on uplands

Taxonomic Classification

Fine-loamy, siliceous, semiactive, mesic Typic Paleudults

Typical Pedon

Wyrick silt loam; in Scott County, Virginia; in a hayfield on a southeast aspect on a slightly convex footslope, 2.6 miles southwest of the intersection of Highways US-23 and VA-629, about 1.2 miles northeast of the intersection of Highways VA-629 and

VA-841; Duffield, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 37 minutes 33.00 seconds N. and long. 82 degrees 46 minutes 46.00 seconds W.

Ap—0 to 9 inches; dark yellowish brown (10YR 4/4) silt loam; moderate fine granular structure; friable, slightly sticky, slightly plastic; many very fine roots; few very fine tubular pores; 5 percent angular chert gravel; strongly acid; abrupt smooth boundary.

Bt1—9 to 29 inches; dark yellowish brown (10YR 4/6) silty clay loam; weak coarse subangular blocky structure; friable, moderately sticky, moderately plastic; common very fine roots; few very fine tubular pores; common faint clay films on faces of peds; many medium prominent black (10YR 2/1) iron-manganese concretions on faces of peds; 5 percent angular chert gravel; strongly acid; gradual wavy boundary.

Bt2—29 to 60 inches; yellowish brown (10YR 5/6) silty clay loam; weak coarse subangular blocky structure; friable, moderately sticky, moderately plastic; few very fine roots; few very fine tubular pores; common faint clay films on faces of peds; few medium prominent black (10YR 2/1) iron-manganese concretions on faces of peds; 10 percent angular chert gravel; very strongly acid.

Range in Characteristics

Solum thickness: 40 to 60 inches or more
Depth to bedrock: More than 60 inches
Reaction: Extremely acid to strongly acid
Rock fragments (content, type): 0 to 15 percent; chert, shale, siltstone, or fine-grained sandstone

Ap horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 or 4
Texture—silt loam

Bt horizon:
Hue—5YR to 10YR
Value—4 to 6
Chroma—4 to 8
Texture—loam, silt loam, silty clay loam, or clay loam

2Bt horizon (if it occurs):
Hue—5YR to 10YR
Value—4 to 8
Chroma—4 to 8
Texture—silty clay loam, silty clay, or clay

Formation of the Soils

In this section the factors and processes of soil formation are described and are related to the soils in Russell County. The morphology of the soils and processes of horizon differentiation are also discussed.

The soils in Russell County exhibit unique features and properties, many of which can be measured in laboratories. Other properties, such as soil temperature, can only be measured or observed in the field. Soils form as certain horizons, or layers, develop in weathered parent material. The interaction of topography, climate, and living organisms, over time, on parent material determines soil formation *(19)*. Figures 13, 14, and 15 show the spatial relationship between soils, landform position, and parent material.

Factors of Soil Formation

Soils are intimate mixtures of broken and partly or completely weathered rock, minerals, organic matter, living plants and animals, water, and air. They occur as part of the natural landscape and differ from place to place. They differ in occurrence, in degree of development of various horizons, in mineral content, in depth over bedrock, and in texture, color, and slope. The characteristics of the soils in any given area depend upon the interaction of the five factors of soil formation—parent material, climate, living organisms, topography, and time. Topography over time modifies the effect of climate and living organisms on parent material *(7)*.

In theory, if all soil-forming factors were identical at different sites, the soils at these sites would be identical. However, all of these factors influence the genesis of every soil and their relative importance varies from place to place. One factor may outweigh others in the formation of a soil and may determine most of its properties. For example, a very young soil on flood plains may have only faint soil horizonation because the soil-forming factors have been active a short time. In contrast, a soil that formed in residuum from bedrock on a stable landscape may have distinct horizons. The horizons are distinct because the soil material has remained largely in place and all the soil-forming factors have been active for a long time. In general, however, the combined action of the five factors determines the character of each soil. The interaction of the five factors of soil formation is more complex for some soils than for others.

Parent Material

Parent material is the unconsolidated mass in which a soil forms. It is a product of weathering, or decomposition, of underlying bedrock or transported materials. Parent material influences the chemical, mineral, and textural composition of the soil. In the early stages of soil formation, a soil has properties similar to those of the parent material. As weathering takes place, the soil properties are modified and each soil develops its own characteristics. In Gilpin and Wallen soils, parent material has determined the mineral and textural composition. Gilpin soils formed in material weathered mainly from shale. Wallen soils formed in material weathered mainly from coarse-grained sandstone. Gilpin soils contain more weatherable minerals and more

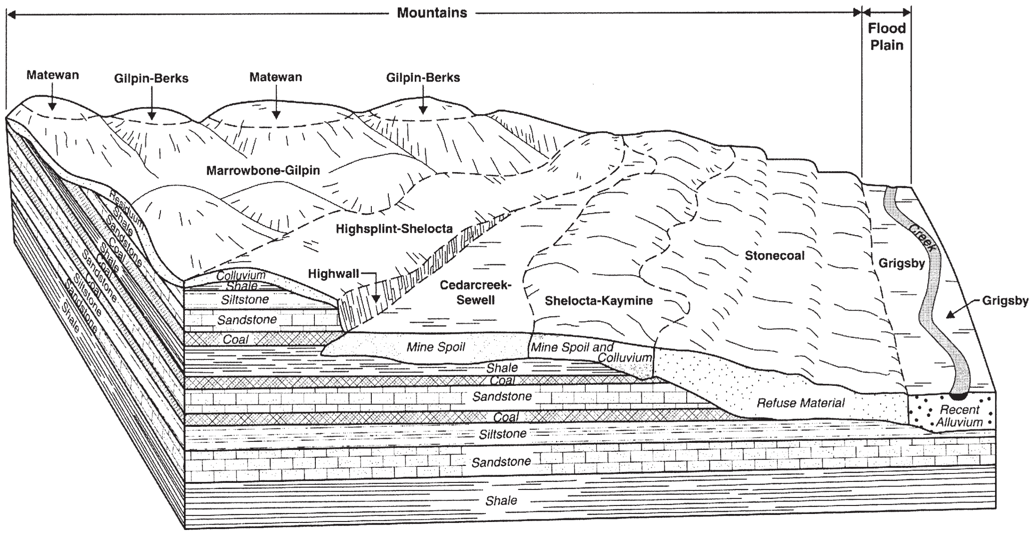

Figure 13.—Diagram of a sequence of landform positions in the Appalachian Plateau area of Russell County. The soils named on the land surface are shown in their natural relationship to each other and in their relationship to landform position.

clay than Wallen soils. Gilpin soils have mixed mineralogy and are fine-loamy. Wallen soils have siliceous mineralogy and are loamy-skeletal.

The four general types of parent material in Russell County are residuum, colluvium, alluvium, and mine spoil. Residuum weathered in place from the underlying bedrock. Colluvium was moved by gravity from ridges and the upper slopes and was deposited on the lower slopes. Alluvium was deposited on flood plains and terraces by streams. Mine spoil resulted from the disturbance of land during surface mining for coal.

Residuum.—Soils that formed in residuum are generally located on summits, shoulders, and backslopes. Soils on stable landscapes in Scott County, such as uplands underlain by limestone, have well developed properties. For example, Frederick soils are very deep. Their reddish colors and high content of clay are both derived from the weathering of the underlying limestone. Carbo soils also formed in weathered limestone. They are similar to Frederick soils but are moderately deep to limestone bedrock. Other limestone areas in the county have numerous chert fragments. In these areas the parent material weathers to form such soils as Watahala soils that contain abundant chert fragments.

Residual soils on mountains and hills are generally moderately deep or shallow to bedrock. Moderately deep Wallen soils and shallow Weikert soils are examples. Wallen soils are loamy-skeletal and formed in sandstone. Weikert soils are loamy-skeletal and formed in shale. Both soils have a low content of clay. The content of sand is high in Wallen soils and low in Weikert soils. The properties of Wallen and Weikert soils reflect the underlying parent material in which the soils formed.

Colluvium.—Colluvium is dominantly on lower backslopes, footslopes, and toeslopes. Some colluvium is located along intermittent drainageways in mountains. Most soils that formed in colluvium contain few to many rock fragments, are very deep, and have a subsoil ranging from clayey to loamy-skeletal. The clayey Tumbling soils, for example, formed in colluvium that originated from the upper slopes and contain a mixture of sandstone, shale, and limestone. Other colluvial soils, such as Oriskany, formed in material containing dominantly sandstone.

Alluvium.—Alluvium deposited by streams has properties inherited from the parent material in which the deposits originated. Soils that have a high sand content on flood

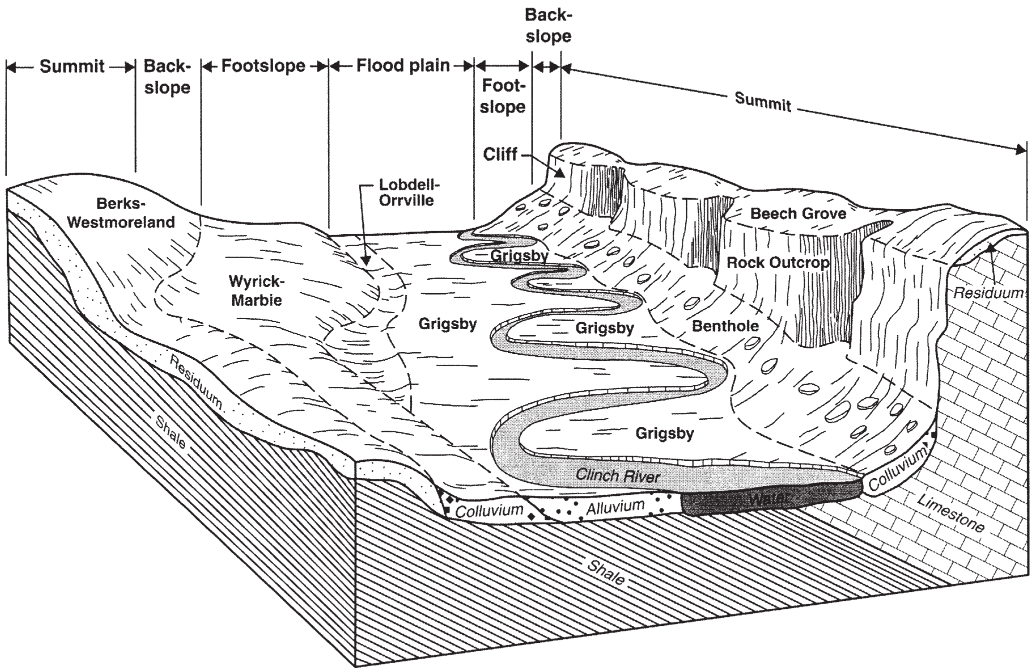

Figure 14.—Diagram of a sequence of landform positions along the Clinch River in areas underlain with limestone and shale in Russell County. The soils named on the land surface are shown in their natural relationship to each other and in their relationship to landform position.

plains have received alluvium from areas containing much sandstone. Grigsby and Ogles soils are examples. Some alluvial soils have an even mixture of sand, silt, and clay, are low in acidity, and have mixed mineralogy. These soils received alluvium from areas containing limestone, shale, and some sandstone. Chagrin, Lobdell, and Holly soils are examples.

Minespoil.—Minespoil, or mine soils, is the material replaced in disturbed areas during reclamation of areas surface mined for coal. Mine soils are mixtures of broken rock and soil material that were originally over the mineable coal seam. Mine soils have properties both of the overburden strata and of the original undisturbed soil. Kaymine soils are an example of mine soils.

Climate

Climate affects the physical, chemical, and biological relationships in soils, mainly through the influence of precipitation and temperature. Water dissolves minerals, supports biological activity, and transports minerals and organic residues through the soil. Temperature determines the type and rate of the physical, chemical, and biological activities that take place in the soil. Weathering is more rapid in a warm, humid climate that in a cold or dry climate.

Because precipitation in Russell County exceeds evapotranspiration, the soils have been intensively leached. Much of the soluble materials originally present or released through weathering has been removed. An exception is alluvial areas, which are recharged with eroded sediments from surrounding uplands. Even though the bedrock in some areas contains calcium, free carbonates of lime have not accumulated in the soils because of leaching. Most of the soils are acid.

Precipitation is the main factor in the formation of the type of subsoil characteristic of most soils in the county. In addition to leaching soluble material, water that percolates through the soil has moved clay from the surface layer to the subsoil.

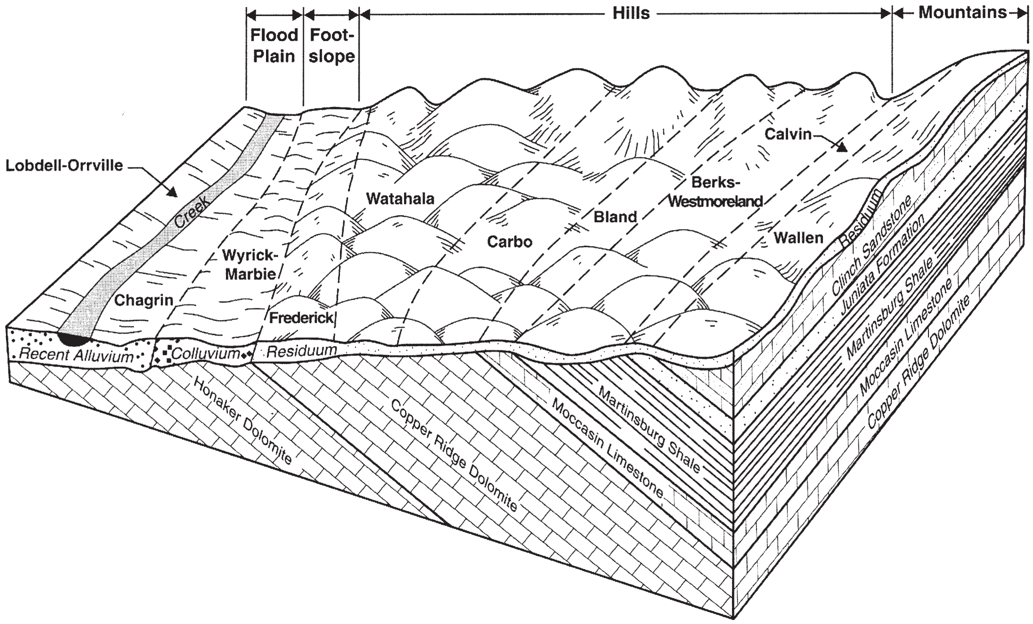

Figure 15.—Diagram of a sequence of landform positions in areas underlain with limestone, shale, and sandstone in Russell County. The soils named on the land surface are shown in their natural relationship to each other and in their relationship to landform position.

Except for those soils that formed in recent alluvium or sand or on very steep slopes, soils in the county typically are more clayey in the subsoil than in the surface layers.

Climate also influences the formation of blocky structure in the subsoil of well developed soils, such as Frederick soils. The development of peds, or aggregates, in the subsoil is caused partly by changes in volume of the soil mass that resulted mainly from alternating periods of wetting and drying. Plentiful moisture also supports a productive forest. A moderate content of humus in the surface layer develops after large amounts of organic materials have been returned to the soil.

Climate varies locally with differences in the degree and direction of slope and elevation. Generally, soils on steep uplands facing south are drier than soils on similar landscapes facing north. Soils that formed in these areas may differ even if they have the same parent material. In the higher elevations of mountains, the climate may be coolor, the precipitation, particularly snowfall, is greater, and fogs are more common. In these higher, cooler areas, soils may be slightly darker and contain slightly more organic matter than soils at the lower elevations. In the higher areas, the weathering of parent materials is slower and the soils generally are thinner than those at the lower elevations.

Living Organisms

Biologic forces are important in the formation of soils in Russell County. Trees, shrubs, grasses, and other herbaceous plants, as well as micro-organisms, earthworms, and other plant and animal life, are active agents in the soil-forming process. Climate, parent material, relief, age of the soil, and other environmental factors determine the kinds of plants and animals that live on and in the soil. Where either climate or vegetation varies significantly, the soils vary accordingly.

Plants supply organic matter and transfer moisture and plant nutrients from the lower horizons to the upper horizons. As organic matter decomposes, it is mixed into the soil by micro-organisms and earthworms or by chemical reactions. In Russell

County, the rate of decomposition is fairly rapid because of the favorable temperatures, the generally abundant soil moisture, and the kinds of micro-organisms in the soil. Organic matter content in the soil is medium or low, ranging from 1 to 3 percent, by volume, in the surface layer.

Originally, the vegetation in the county was dense forest of hardwoods or mixed hardwoods and pine. The density of the stands, the proportion of different species, and the kinds of ground cover were, to some extent, varied. The different types of forests are not likely the reason for all the differences in soil properties throughout the county. The leaves of deep-rooted deciduous trees vary in content of plant nutrients but generally return more bases and phosphorus to the soil than coniferous trees. The litter of conifers, rhododendron, and mountain laurel produces more organic acid than maples and oaks. Soils that form under layers of acid-forming leaf litter tend to be more highly leached than other soils and commonly have very low base saturation. The layer of leaf litter also helps to recycle nutrients, reduces the depth of frost penetration, increases moisture retention, and reduces the hazard of erosion on steep slopes.

As agriculture developed in Russell County, human activities influenced soil formation. They included the clearing of forests and the introduction of new kinds of plants. Cultivation, artificial drainage, and liming and fertilizing changed some soil characteristics. Human activities have also caused accelerated erosion. As a result, the soil in many areas is thinner and vegetation is difficult to establish. Some soil material washed from sloping areas onto depressions and flood plains. Young, or immature, soils, such as Ogles soils, formed in this washed material.

Other human activities that influenced soil formation are coal mining and the grading, shaping, and filling required by road construction and urban development. Kaymine soils formed in coal-mining spoil. Udorthents formed in urban areas where the soil had been disturbed.

Topography

Topography, or the lay of the land, affects the formation of soils by causing differences in internal drainage, surface runoff, soil temperature, and geologic erosion. Topography also affects the rate that radiant energy is absorbed by the soils; this absorption rate, in turn, affects native vegetation. Topography alters the affect of parent material on soil formation. As a result, several different kinds of soils can form from the same kind of parent material.

Slopes in Russell County range from nearly level to very steep. In the steeper areas, runoff is rapid, little water percolates through the soil, the movement of clay and the translocation of bases are both slight, and soil material erodes as fast as it forms. Aspect, which varies greatly in these areas, affects vegetation and soil formation. South-facing slopes are generally drier, and north-facing slopes retain more moisture. Berks, Wallen, and Ramsey soils formed under these conditions.

In the gently sloping and strongly sloping areas, the soils are generally well drained and slightly or moderately eroded. They are mature and have well defined horizons. Frederick and Carbo soils, for example, are mature. Low-lying, flat areas or depressions are wetter, often pond water, and restrict drainage. Soils on colluvial slopes or within drainageways often receive runoff from nearby uplands. In addition, lateral underground seepage from the higher areas is fairly common. Carbonates or other bases in the ground water also may influence soils. The soils on convex slopes are generally better drained; those on concave slopes tend to accumulate both runoff and waters from internal drainage. For example, Tumbling soils are well drained soils on convex, colluvial slopes and Lobdell soils are moderately well drained soils on concave slopes.

Time

The length of time that the parent material has been exposed to the soil-forming processes influences the kind of soil that forms. The youngest soils in Russell County, including Holly, Orrville, Lobdell, Chagrin, Grigsby, and Ogles soils, formed in recent alluvium on flood plains. These soils can be stratified and have weakly expressed horizons because the soil-forming processes are interrupted with each new deposition during flooding.

Soil formation is evident even in young mine spoil. Within a few years, weak structure develops and some rock fragments soften and are more easily crushed. Internal drainage in the mine spoil may increase as these soils continue to develop over time.

Old, strongly developed soils show well defined genetic horizons. Young, less developed soils show only faint or weakly developed horizons. The soils of Russell County range from young soils on flood plains and reclaimed strip mines to old soils on smooth uplands.

In steep and very steep areas, creep and washing moves soil material or solifluction mixes soil material before it has sufficient time to develop a deep soil profile. As a result, shallow and weakly developed soils, such as Ramsey, Chiswell, and Weikert, are common on steep slopes.

Morphology of the Soils

The interaction of the soil-forming factors results in distinguishable layers, or horizons, in a soil profile. The soil profile extends from the surface of the soil downward to materials that are little altered by the soil-forming processes.

Most soils have three major horizons—the A, B, and C horizons. Some soils have a fourth major horizon—an E horizon—between the A and B horizons. The major horizons can be further subdivided by the use of symbols and letters to indicate changes within a horizon. A Bt horizon, for example, represents a layer within the B horizon that consists of translocated clay which was eluviated from the A and E horizons.

The A horizon, or surface layer, has the largest accumulation of organic matter.

The E horizon is the layer of maximum leaching, or eluviation, of clay and iron.

The B horizon, or subsoil, lies beneath the A and E horizons. It is the horizon of maximum accumulation, or illuviation, of clay, iron, aluminum, and other elements leached from the layers above. In some soils the B horizon is formed by alteration in place rather than by illuviation. The alteration may be caused by the oxidation and reduction of iron or by the weathering of clay minerals. The Bt horizon is a layer of accumulated clay. Generally, compared to the A horizon, it is firmer, has a finer texture, has a stronger structure, and is brighter or redder. Most young soils do not have a developed Bt horizon.

The C horizon is below the A and B horizons. It consists of material that has been little altered by the soil-forming processes, but it may have been modified by weathering.

Processes of Horizon Differentiation

Soils formed as the result of the physical and chemical weathering of parent rocks and organic material, the transfer of materials, the transformation of materials, and the gains and losses of organic matter and minerals.

Soil formation begins with the physical weathering of rocks. Large pieces of rock are broken into smaller pieces by frost action, expansion, contraction, and other forces. The rocks and rock fragments are further reduced to sand-, silt-, and clay-sized

particles. These particles form the unconsolidated material in which plants can grow. When plants and animals die, organic matter is added to the mineral material.

Commonly, materials transfer from one part of the soil to another. Organic matter in suspension moves from the surface layer into the subsoil. Calcium and other elements are leached from the surface layer. To some extent these elements are held by the clay in the subsoil or the substratum, but some elements are also leached from the soil by percolating ground water. Clay is also transferred from upper horizons to lower horizons by percolating water.

Bases are absorbed by the roots of plants and stored in stems, leaves, and twigs. When plants die and decay, they return to the soil the elements they had absorbed in it. In most soils in Russell County, the translocation and development in place of clay minerals have strongly influenced the development of soil horizons. As a soil develops, horizons gradually develop recognizable characteristics that make one horizon distinguishable from another.

The accumulation and incorporation of organic matter takes place with the decomposition of plant residue. Organic matter darkens the surface layer and helps to form the A horizon. In many places much of the surface layer has been eroded away or has been mixed with materials from underlying layers through cultivation. Replacing lost organic matter normally takes a long time. In Russell County, the organic matter content of the surface layer is low in Frederick and Weikert soils and medium in Grigsby soils.

Some lime and soluble salts must be leached from soils before the translocation of clay minerals and the formation of a distinct subsoil can occur. Factors that affect leaching include the kind of original salts present in the soil, the depth to which the soil solution percolates, and the texture of the soil.

One transformation is the reduction and solubilization of ferrous iron. This process takes place under wet, saturated conditions in which water replaces molecular oxygen. It mainly occurs in soils that are not well drained. Gleying, or the reduction of iron, is evident in Holly and Lobdell soils, which are dominantly gray throughout. The gray color indicates the transformation of iron to the ferrous form and implies wetness. Reduced iron, which is soluble and mobile, commonly has been moved short distances in the soils in Russell County. It has stopped either in the horizon where it originated or in an underlying horizon. A portion of this iron can be reoxidized and segregated in the form of stains, concretions, or bright yellow and red redoximorphic features.

References

(1) American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th ed.

(2) American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Stand. D 2487.

(3) Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildl. Serv. FWS/OBS-79/31.

(4) Federal Register. July 13, 1994. Changes in hydric soils of the United States.

(5) Federal Register. September 18, 2002. Hydric soils of the United States.

(6) Hurt, G.W., P.M. Whited, and R.F. Pringle, eds. 2002. Field indicators of hydric soils in the United States. Ver. 5.0.

(7) Jenny, Hans. 1941. Factors of soil formation.

(8) National Research Council. 1995. Wetlands: Characteristics and boundaries.

(9) Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildl. Serv. and Del. Dep. of Natural Resources and Environ. Control, Wetl. Sec.

(10) United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Exp. Stn. Tech. Rep. Y-87-1.

(11) United States Department of Agriculture. 1945. Soil survey of Russell County, Virginia.

(12) United States Department of Agriculture, National Agricultural Statistics Service. 2002. County summary highlights. (Available at http://www.nass.usda.gov/census/)

(13) United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. (Available at http://soils.usda.gov/technical/)

(14) United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook. Title 430-VI. (Available at http://soils.usda.gov/technical/)

(15) United States Department of Agriculture, Natural Resources Conservation Service. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. Soil Surv. Staff. 2nd ed. U.S. Dep. Agric. Handb. 436.

(16) United States Department of Agriculture, Natural Resources Conservation Service. 2002. Field book for describing and sampling soils. P.J. Schoeneberger, D.A. Wysocki, E.C. Benham, and W.D. Broderson, eds. Ver. 2.0.

(17) United States Department of Agriculture, Natural Resources Conservation Service. 2003. Keys to soil taxonomy. Soil Surv. Staff. 9th ed.

(18) United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Dep. Agric. Handb. 210.

(19) United States Department of Agriculture, Soil Conservation Service. 1993. Soil survey manual. Soil Surv. Staff. U.S. Dep. Agric. Handb. 18. (Available at http://soils.usda.gov/technical/)

(20) United States Department of Commerce, Census Bureau. 2000. Census 2000 summary file 1. (Available at http://factfinder.census.gov)

(21) Virginia Polytechnic Institute and State University. 1994. VALUES—Virginia Agronomic Land Use Evaluation System. *In* Soil Test Recommendations for Virginia (S.D. Donohue, ed.). Va. Coop. Ext.

Glossary

ABC soil. A soil having an A, a B, and a C horizon.
AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.
Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.
Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.
Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.
Alluvial cone. A semiconical type of alluvial fan having very steep slopes. It is higher, narrower, and steeper than a fan and is composed of coarser and thicker layers of material deposited by a combination of alluvial episodes and (to a much lesser degree) landslides (debris flow). The coarsest materials tend to be concentrated at the apex of the cone.
Alluvial fan. A low, outspread mass of loose materials and/or rock material, commonly with gentle slopes. It is shaped like an open fan or a segment of a cone. The material was deposited by a stream at the place where it issues from a narrow mountain valley or upland valley or where a tributary stream is near or at its junction with the main stream. The fan is steepest near its apex, which points upstream, and slopes gently and convexly outward (downstream) with a gradual decrease in gradient.
Alluvium. Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.
Alpha,alpha-dipyridyl. A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.
Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.
Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.
Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.
Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Backslope. The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Backswamp. A flood-plain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.

Basal area. The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope (geomorphology). A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Bedding plane. A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology) from the preceding or following layer; a plane of deposition. It commonly marks a change in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.

Bedding system. A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bench. In surface mining, a nearly level to gently inclined cut section in a mountain slope or footslope from which a seam of coal has been removed.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Blowout. A saucer-, cup-, or trough-shaped depression formed by wind erosion on a preexisting dune or other sand deposit, especially in an area of shifting sand or loose soil or where protective vegetation is disturbed or destroyed; the adjoining accumulation of sand derived from the depression, where recognizable, is commonly included. Blowouts are commonly small.

Bottom land. An informal term loosely applied to various portions of a flood plain.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks. A landscape or tract of steep, rough or broken land dissected by ravines and gullies and marking a sudden change in topography.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Cable yarding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole,

and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

California bearing ratio (CBR). The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or “chain,” of soils on a landscape that formed in similar kinds of parent material and under similar climatic conditions but that have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Catsteps. See Terracettes.

Cement rock. Shaly limestone used in the manufacture of cement.

Channery soil material. Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. See Redoximorphic features.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A dense, compact, slowly permeable subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. A claypan is commonly hard when dry and plastic and sticky when wet.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Concretions. See Redoximorphic features.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility). See Linear extensibility.

Colluvium. Unconsolidated, unsorted earth material being transported or deposited

on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conglomerate. A coarse-grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the “Soil Survey Manual.”

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat). A type of limnic layer composed predominantly of fecal material derived from aquatic animals.

Corrosion (geomorphology). A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations). Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropping system. Growing crops according to a planned system of rotation and management practices.
Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.
Crown. The upper part of a tree or shrub, including the living branches and their foliage.
Cryoturbate. A mass of soil or other unconsolidated earthy material moved or disturbed by frost action. It is typically coarser than the underlying material.
Cuesta. An asymmetric ridge capped by resistant rock layers of slight or moderate dip (commonly less than 15 percent slopes); a type of homocline produced by differential erosion of interbedded resistant and weak rocks. A cuesta has a long, gentle slope on one side (dip slope) that roughly parallels the inclined beds; on the other side, it has a relatively short and steep or clifflike slope (scarp) that cuts through the tilted rocks.
Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.
Cut and filled. An area that has been disturbed or altered by human activity. As a result, the natural soil was removed and was replaced by soil or other material in an unnatural process.
Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.
Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.
Delta. A body of alluvium having a surface that is fan shaped and nearly flat; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.
Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.
Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep soils, 20 to 40 inches; shallow soils, 10 to 20 inches; and very shallow soils, less than 10 inches.
Differential settling. Uneven settling of earthy material.
Diatomaceous earth. A geologic deposit of fine, grayish siliceous material composed chiefly or entirely of the remains of diatoms.
Dip slope. A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.
Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.
Divided-slope farming. A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.
Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat*

poorly drained, poorly drained, and *very poorly drained*. These classes are defined in the “Soil Survey Manual.”

Drainage, surface. Runoff, or surface flow of water, from an area.

Drainageway. A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Draw. A small stream valley that generally is shallower and more open than a ravine or gulch and that has a broader bottom. The present stream channel may appear inadequate to have cut the drainageway that it occupies.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Dune. A low mound, ridge, bank, or hill of loose, windblown granular material (generally sand), either barren and capable of movement from place to place or covered and stabilized with vegetation but retaining its characteristic shape.

Earthy fill. See Mine spoil.

Ecological site. An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion pavement. A surficial lag concentration or layer of gravel and other rock fragments that remains on the soil surface after sheet or rill erosion or wind has removed the finer soil particles and that tends to protect the underlying soil from further erosion.

Erosion surface. A land surface shaped by the action of erosion, especially by running water.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal

grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan remnant. A general term for landforms that are the remaining parts of older fan landforms, such as alluvial fans, that have been either dissected or partially buried.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil. Sandy clay, silty clay, or clay.

Firebreak. An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom. An obsolete, informal term loosely applied to the lowest flood-plain steps that are subject to regular flooding.

Flaggy soil material. Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

Flood-plain landforms. A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

Flood-plain splay. A fan-shaped deposit or other outspread deposit formed where an overloaded stream breaks through a levee (natural or artificial) and deposits its material (commonly coarse grained) on the flood plain.

Flood-plain step. An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.

Fluvial. Of or pertaining to rivers or streams; produced by stream or river action.

Foothills. A region of steeply sloping hills that fringes a mountain range or high-plateau escarpment. The hills have relief of as much as 1,000 feet (300 meters).

Footslope. The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of

given physical and biological factors by which it may be differentiated from other stands.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gilgai. Commonly, a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A small channel with steep sides caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim (in tables). Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head slope (geomorphology). A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Highwall. A high, very steep to perpendicular face of rock or earth. The face was exposed in surface mining to remove coal from a seam along a mountain slope.

Hill. A generic term for an elevated area of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

Hillslope. A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

L horizon.—A layer of organic and mineral limnic materials, including coprogenous earth (sedimentary peat), diatomaceous earth, and marl.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock. Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., andesite, basalt, and granite).

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other

material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Interfluve. A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology). A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream. A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. See Redoximorphic features.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Karst (topography). A kind of topography that formed in limestone, gypsum, or other soluble rocks by dissolution and that is characterized by closed depressions, sinkholes, caves, and underground drainage.

Knoll. A small, low, rounded hill rising above adjacent landforms.

K_{sat}. Saturated hydraulic conductivity. (See Permeability.)

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain. A nearly level surface marking the floor of an extinct lake filled by well sorted, generally fine textured, stratified deposits, commonly containing varves.

Lake terrace. A narrow shelf, partly cut and partly built, produced along a lakeshore in front of a scarp line of low cliffs and later exposed when the water level falls.

Landslide. A general, encompassing term for most types of mass movement landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement may or may not involve saturated materials. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Material transported and deposited by wind and consisting dominantly of silt-sized particles.

Low strength. The soil is not strong enough to support loads.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Marl. An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal proportions; formed primarily under freshwater lacustrine conditions but also formed in more saline environments.

Mass movement. A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.

Masses. See Redoximorphic features.

Meander belt. The zone within which migration of a meandering channel occurs; the flood-plain area included between two imaginary lines drawn tangential to the outer bends of active channel loops.

Meander scar. A crescent-shaped, concave or linear mark on the face of a bluff or valley wall, produced by the lateral erosion of a meandering stream that impinged upon and undercut the bluff.

Meander scroll. One of a series of long, parallel, close-fitting, crescent-shaped ridges

and troughs formed along the inner bank of a stream meander as the channel migrated laterally down-valley and toward the outer bank.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mesa. A broad, nearly flat topped and commonly isolated landmass bounded by steep slopes or precipitous cliffs and capped by layers of resistant, nearly horizontal rocky material. The summit width is characteristically greater than the height of the bounding escarpments.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement at depth in the earth's crust. Nearly all such rocks are crystalline.

Mine spoil. An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. A kind of map unit that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mountain. A generic term for an elevated area of the land surface, rising more than 1,000 feet (300 meters) above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range. Mountains are formed primarily by tectonic activity and/or volcanic action but can also be formed by differential erosion.

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mudstone. A blocky or massive, fine-grained sedimentary rock in which the proportions of clay and silt are approximately equal. Also, a general term for such material as clay, silt, claystone, siltstone, shale, and argillite and that should be used only when the amounts of clay and silt are not known or cannot be precisely identified.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon. A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)
Nodules. See Redoximorphic features.
Nose slope (geomorphology). A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).
Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.
Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Paleoterrace. An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.
Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.
Parent material. The unconsolidated organic and mineral material in which soil forms.
Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)
Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.
Pedisediment. A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that lies on and is being (or was) transported across a gently sloping erosional surface at the foot of a receding hill or mountain slope.
Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.
Percolation. The movement of water through the soil.
Permafrost. Ground, soil, or rock that remains at or below 0 degrees C for at least 2 years. It is defined on the basis of temperature and is not necessarily frozen.
Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Impermeable	less than 0.0015 inch
Very slow	0.0015 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting (in tables). Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plateau (geomorphology). A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower-lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.

Playa. The generally dry and nearly level lake plain that occupies the lowest parts of closed depressions, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff. Playa deposits are fine grained and may or may not have a high water table and saline conditions.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse-grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Pore linings. See Redoximorphic features.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Red beds. Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations. See Redoximorphic features.

Redoximorphic depletions. See Redoximorphic features.

Redoximorphic features. Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features. The redoximorphic features are defined as follows:

1. *Redoximorphic concentrations.*—These are zones of apparent accumulation of iron-manganese oxides and include nodules and concretions, masses, and pore linings. *Nodules and concretions* are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure. *Masses* are noncemented concentrations of substances within the soil matrix. *Pore linings* are zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.

2. *Redoximorphic depletions.*—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out. They include iron depletions and clay depletions. *Iron depletions* are zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix. *Clay depletions* are zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletans).

3. *Reduced matrix.*—This is a soil matrix that has low chroma in situ but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix. See Redoximorphic features.

Regolith. All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief. The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

Ridge. A long, narrow elevation of the land surface, generally with a sharp crest and

steep sides. It forms an extended upland between valleys. The term is used in areas of both hill and mountain relief.

Rill. A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Riser. The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Sand. As a soil separate, individual rock or mineral fragments ranging from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturated hydraulic conductivity (K_{sat}). See Permeability.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Sedimentary rock. A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shoulder. The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Shrub-coppice dune. A small, streamlined dune that forms around brush and clump vegetation.

Side slope (geomorphology). A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio. The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole. A closed, circular or elliptical depression, commonly funnel shaped, characterized by subsurface drainage and formed either by dissolution of the surface of underlying bedrock (e.g., limestone, gypsum, or salt) or by collapse of underlying caves within bedrock. Complexes of sinkholes in carbonate-rock terrain are the main components of karst topography.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides (pedogenic). Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Nearly level	0 to 3 percent
Gently sloping	3 to 8 percent
Strongly sloping	8 to 15 percent
Moderately steep	15 to 25 percent
Steep	25 to 35 percent
Very steep	35 percent and higher

Slope alluvium. Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished peds and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Sodic (alkali) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so

high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodicity. The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^{+} to Ca^{++} + Mg^{++}. The degrees of sodicity and their respective ratios are:

Slight	less than 13:1
Moderate	13-30:1
Strong	more than 30:1

Sodium adsorption ratio (SAR). A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil crusts. Relatively thin, somewhat continuous layers of the soil surface that often restrict water movement, air entry, and seedling emergence from the soil. They generally are less than 2 inches thick and are massive.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Spur. A subordinate ridge or lesser elevation that projects sharply from the crest or side of a hill, mountain, or other prominent range of hills or mountains.

Stone line. In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Strath terrace. A type of stream terrace; formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).

Stream terrace. One of a series of platforms in a stream valley, flanking and more or

less parallel to the stream channel, originally formed near the level of the stream; represents the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit. The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Talus. Rock fragments of any size or shape (commonly coarse and angular) derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose broken rock formed chiefly by falling, rolling, or sliding.

Terrace (conservation). An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geomorphology). A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.

Terracettes. Small, irregular steplike forms on steep hillslopes, especially in pasture, formed by creep or erosion of surficial materials that may be induced or enhanced by trampling of livestock, such as sheep or cattle.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.”

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tread. The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

Unstable fill (in tables). There is a risk of caving or sloughing on banks of fill material. Fill material that is subject to differential settling.

Upland. An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.

Valley. An elongate, relatively large, externally drained depression of the earth's surface primarily developed by stream erosion.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering. All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded. Refers to soil material consisting of coarse-grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.—Temperature and Precipitation, Part I

(Recorded in the period 1971-2000 at Grundy, Virginia)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temp. higher than--	2 years in 10 will have-- Minimum temp. lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snow-fall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January--	45.6	23.1	34.4	73	-4	57	3.52	1.91	4.92	7	6.9
February-	50.4	25.3	37.9	78	1	92	3.19	1.94	4.42	7	5.2
March----	59.6	32.1	45.8	84	12	233	3.92	2.17	5.37	8	2.9
April----	69.1	39.1	54.1	89	24	426	4.03	2.18	5.78	8	1.1
May------	76.9	49.1	63.0	91	32	711	4.91	2.84	6.87	9	0.0
June-----	83.6	58.0	70.8	95	43	919	4.53	2.22	6.73	8	0.0
July-----	87.2	62.9	75.0	97	50	1,081	4.95	3.12	6.71	8	0.0
August---	86.1	62.1	74.1	96	50	1,050	3.93	2.66	5.18	7	0.0
September	80.4	55.3	67.9	95	38	836	3.51	2.12	4.83	6	0.0
October--	70.5	41.5	56.0	87	25	497	3.15	1.67	4.60	6	0.0
November-	60.1	32.9	46.5	82	15	236	3.10	1.65	4.43	7	0.7
December-	49.6	26.0	37.8	73	4	91	3.24	1.88	4.32	7	3.0
Yearly:											
Average	68.3	42.3	55.3	---	---	---	---	---	---	---	---
Extreme	102	-14	---	98	-7	---	---	---	---	---	---
Total--	---	---	---	---	---	6,229	45.98	36.85	52.74	88	19.7

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

Table 1.—Temperature and Precipitation, Part II

(Recorded in the period 1971-2000 at Abingdon, Virginia)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temp. higher than--	2 years in 10 will have-- Minimum temp. lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snow-fall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January--	44.6	23.8	34.2	69	-7	58	4.08	2.83	5.23	9	6.8
February-	49.4	26.0	37.7	74	-1	86	3.89	2.53	5.12	8	4.8
March----	59.0	32.9	45.9	80	8	235	4.51	2.87	5.99	9	1.8
April----	67.8	39.7	53.8	86	21	422	3.71	2.27	5.00	8	0.2
May------	75.4	48.3	61.8	88	30	672	4.89	3.26	6.37	9	0.0
June-----	82.0	56.5	69.3	92	39	876	4.17	2.41	5.73	8	0.0
July-----	85.4	60.5	73.0	94	48	1,020	4.76	3.23	6.17	9	0.0
August---	84.3	59.2	71.7	94	46	981	3.71	2.50	4.82	7	0.0
September	78.7	52.8	65.7	91	34	771	3.55	1.59	5.22	6	0.0
October--	68.9	40.8	54.8	83	22	461	2.79	1.30	4.07	5	0.0
November-	58.1	33.4	45.8	79	14	223	3.35	2.14	4.45	7	0.5
December-	48.4	26.4	37.4	71	1	95	4.01	2.52	5.35	8	2.2
Yearly:											
Average	66.8	41.7	54.3	---	---	---	---	---	---	---	---
Extreme	100	-21	---	95	-10	---	---	---	---	---	---
Total--	---	---	---	---	---	5,902	47.41	41.75	52.25	93	16.2

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

Table 2.—Freeze Dates in Spring and Fall, Part I

(Recorded in the period 1971-2000 at Grundy, Virginia)

Probability	Temperature 24 ^{O}F or lower	28 ^{O}F or lower	32 ^{O}F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 10	Apr. 24	May 6
2 years in 10 later than--	Apr. 5	Apr. 19	May 1
5 years in 10 later than--	Mar. 25	Apr. 9	Apr. 21
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 20	Oct. 16	Oct. 5
2 years in 10 earlier than--	Oct. 27	Oct. 21	Oct. 10
5 years in 10 earlier than-	Nov. 8	Nov. 1	Oct. 20

Table 2.—Freeze Dates in Spring and Fall, Part II

(Recorded in the period 1971-2000 at Abingdon, Virginia)

Probability	Temperature 24 ^{O}F or lower	28 ^{O}F or lower	32 ^{O}F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 16	May 1	May 16
2 years in 10 later than--	Apr. 10	Apr. 25	May 10
5 years in 10 later than--	Mar. 30	Apr. 15	Apr. 29
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 17	Oct. 4	Sept. 29
2 years in 10 earlier than--	Oct. 24	Oct. 10	Oct. 3
5 years in 10 earlier than-	Nov. 5	Oct. 20	Oct. 10

Table 3.—Growing Season, Part I

(Recorded in the period 1971-2000 at Grundy, Virginia)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	204	186	161
8 years in 10	211	193	168
5 years in 10	224	206	181
2 years in 10	238	220	195
1 year in 10	245	227	202

Table 3.—Growing Season, Part II

(Recorded in the period 1971-2000 at Abingdon, Virginia)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	194	165	140
8 years in 10	203	173	148
5 years in 10	220	188	163
2 years in 10	236	204	178
1 year in 10	245	212	185

Table 4.—Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
1E	Berks-Chiswell complex, 35 to 55 percent slopes	3,128	1.0
1F	Berks-Chiswell complex, 55 to 80 percent slopes	11,528	3.8
2D	Berks-Gilpin complex, 15 to 35 percent slopes	2,679	0.9
2E	Berks-Gilpin complex, 35 to 55 percent slopes	1,413	0.5
2F	Berks-Gilpin complex, 55 to 70 percent slopes	4,060	1.3
3C	Berks-Groseclose complex, 8 to 15 percent slopes	587	0.2
3D	Berks-Groseclose complex, 15 to 35 percent slopes	2,680	0.9
4D	Berks-Poplimento complex, 15 to 35 percent slopes	6,053	2.0
5C	Berks-Weikert channery silt loams, 8 to 15 percent slopes	117	*
5D	Berks-Weikert channery silt loams, 15 to 35 percent slopes	559	0.2
5E	Berks-Weikert channery silt loams, 35 to 55 percent slopes	1,511	0.5
5F	Berks-Weikert channery silt loams, 55 to 70 percent slopes	1,161	0.4
6E	Berks-Westmoreland complex, 35 to 55 percent slopes	8,140	2.7
6F	Berks-Westmoreland complex, 55 to 70 percent slopes	25,962	8.5
7E	Bland silty clay loam, 25 to 50 percent slopes, eroded	1,940	0.6
8D	Bland-Rock outcrop complex, 8 to 25 percent slopes, eroded	3,339	1.1
8E	Bland-Rock outcrop complex, 25 to 50 percent slopes, eroded	5,894	1.9
9D	Bland-Rock outcrop complex, karst, 8 to 35 percent slopes, eroded	971	0.3
10D	Calvin loam, 15 to 35 percent slopes	168	*
11F	Calvin-Rough complex, 35 to 80 percent slopes, very rocky	3,149	1.0
12C	Carbo-Beech Grove complex, 8 to 15 percent slopes, very rocky, eroded	3,625	1.2
12D	Carbo-Beech Grove complex, 15 to 25 percent slopes, very rocky, eroded	6,275	2.0
12E	Carbo-Beech Grove complex, 25 to 35 percent slopes, very rocky, eroded	3,092	1.0
12F	Carbo-Beech Grove complex, 35 to 65 percent slopes, very rocky, eroded	2,912	0.9
13C	Carbo-Frederick-Urban land complex, 0 to 15 percent slopes, eroded	232	*
14D	Carbo-Rock outcrop complex, 8 to 25 percent slopes, eroded	7,932	2.6
14E	Carbo-Rock outcrop complex, 25 to 65 percent slopes, eroded	16,850	5.5
15D	Carbo-Rock outcrop complex, karst, 8 to 35 percent slopes, eroded	9,101	3.0
16C	Cedarcreek-Sewell-Rock outcrop complex, 0 to 15 percent slopes, very stony	2,269	0.7
17A	Chagrin loam, 0 to 3 percent slopes, occasionally flooded	3,550	1.2
18	Dumps, mine-Urban land complex	613	0.2
19C	Frederick silt loam, 8 to 15 percent slopes, eroded	4,463	1.5
19D	Frederick silt loam, 15 to 25 percent slopes, eroded	5,849	1.9
19E	Frederick silt loam, 25 to 35 percent slopes, eroded	1,888	0.6
19F	Frederick silt loam, 35 to 60 percent slopes, eroded	859	0.3
20C	Frederick silt loam, karst, 8 to 15 percent slopes, eroded	1,812	0.6
20D	Frederick silt loam, karst, 15 to 25 percent slopes, eroded	2,641	0.9
21C	Frederick gravelly silt loam, 8 to 15 percent slopes, eroded	639	0.2
21D	Frederick gravelly silt loam, 15 to 25 percent slopes, eroded	2,099	0.7
21E	Frederick gravelly silt loam, 25 to 35 percent slopes, eroded	860	0.3
21F	Frederick gravelly silt loam, 35 to 60 percent slopes, eroded	311	0.1
22C	Frederick gravelly silt loam, karst, 8 to 15 percent slopes, eroded	454	0.1
22D	Frederick gravelly silt loam, karst, 15 to 25 percent slopes, eroded	2,074	0.7
23D	Gilpin silt loam, 15 to 35 percent slopes	225	*
24D	Gilpin-Berks complex, 25 to 35 percent slopes	153	*
24F	Gilpin-Berks complex, 35 to 70 percent slopes	684	0.2
25E	Gilpin-Shelocta silt loams, 35 to 55 percent slopes, very stony	193	*
26F	Gilpin-Shelocta silt loams, 55 to 70 percent slopes, rocky	984	0.3
27A	Grigsby sandy loam, 0 to 3 percent slopes, occasionally flooded	1,348	0.4
28C	Highsplint channery silt loam, 8 to 15 percent slopes, very stony	77	*
28D	Highsplint channery silt loam, 15 to 35 percent slopes, very stony	1,992	0.6
29F	Highsplint-Shelocta complex, 55 to 80 percent slopes, very stony	14,097	4.6
30A	Holly loam, 0 to 3 percent slopes, occasionally flooded	162	*
31D	Kaymine very channery silt loam, 15 to 35 percent slopes, extremely stony	805	0.3
32E	Kaymine-Cedarcreek complex, 35 to 55 percent slopes, extremely stony	2,197	0.7
33F	Kaymine-Fiveblock complex, 55 to 80 percent slopes, extremely stony	808	0.3
34C	Kaymine-Fiveblock-Cedarcreek complex, 0 to 15 percent slopes, extremely stony	2,029	0.7
35C	Lily loam, 8 to 15 percent slopes	485	0.2

See footnote at end of table.

Table 4.—Acreage and Proportionate Extent of the Soils—Continued

Map symbol	Soil name	Acres	Percent
35D	Lily loam, 15 to 35 percent slopes	1,397	0.5
35E	Lily loam, 35 to 55 percent slopes	984	0.3
36A	Lobdell-Orrville complex, 0 to 3 percent slopes, occasionally flooded	4,664	1.5
37D	Mandy-Paddyknob-Rock outcrop complex, 8 to 35 percent slopes, very stony	572	0.2
38D	Marrowbone fine sandy loam, 15 to 35 percent slopes, very stony	3,910	1.3
38E	Marrowbone fine sandy loam, 35 to 55 percent slopes, very stony	4,031	1.3
38F	Marrowbone fine sandy loam, 55 to 70 percent slopes, very stony	3,901	1.3
39D	Marrowbone-Gilpin complex, 15 to 25 percent slopes	863	0.3
39E	Marrowbone-Gilpin complex, 25 to 35 percent slopes	189	*
39F	Marrowbone-Gilpin complex, 35 to 70 percent slopes	188	*
40F	Matewan-Rock outcrop complex, 55 to 80 percent slopes, extremely stony	486	0.2
41A	Ogles very stony loam, 0 to 3 percent slopes, occasionally flooded	2,023	0.7
42C	Oriskany very cobbly fine sandy loam, 8 to 15 percent slopes, extremely stony	329	0.1
42D	Oriskany very cobbly fine sandy loam, 15 to 35 percent slopes, extremely stony	1,547	0.5
42E	Oriskany very cobbly fine sandy loam, 35 to 55 percent slopes, extremely stony	2,872	0.9
43	Pits, quarry	283	*
44C	Poplimento-Westmoreland complex, 8 to 15 percent slopes	963	0.3
45F	Ramsey-Rock outcrop complex, 35 to 70 percent slopes	64	*
46F	Rock outcrop-Beech Grove-Benthole complex, 55 to 100 percent slopes, extremely bouldery	1,886	0.6
47F	Sewell-Kaymine-Rock outcrop complex, 0 to 80 percent slopes, extremely stony	810	0.3
48E	Shelocta-Cedarcreek complex, 35 to 55 percent slopes, very bouldery	1,561	0.5
49E	Shelocta-Highsplint complex, 35 to 55 percent slopes, very stony	7,374	2.4
50F	Shelocta-Kaymine complex, 55 to 80 percent slopes, very bouldery	605	0.2
51F	Stonecoal extremely channery sandy loam, 0 to 80 percent slopes	465	0.2
52C	Tumbling loam, 8 to 15 percent slopes	4,398	1.4
52D	Tumbling loam, 15 to 25 percent slopes	6,680	2.2
53E	Tumbling loam, 25 to 45 percent slopes, very stony	1,793	0.6
54F	Udorthents-Urban land complex, 0 to 80 percent slopes	2,857	0.9
55D	Wallen channery sandy loam, 15 to 35 percent slopes, very stony	21	*
55F	Wallen channery sandy loam, 35 to 70 percent slopes, very stony	107	*
56D	Wallen-Rock outcrop complex, 15 to 35 percent slopes, extremely stony	152	*
56F	Wallen-Rock outcrop complex, 35 to 80 percent slopes, extremely stony	1,797	0.6
57C	Watahala gravelly silt loam, 8 to 15 percent slopes	3,590	1.2
57D	Watahala gravelly silt loam, 15 to 25 percent slopes	17,342	5.7
57E	Watahala gravelly silt loam, 25 to 35 percent slopes	13,077	4.3
57F	Watahala gravelly silt loam, 35 to 55 percent slopes	9,915	3.2
58D	Watahala gravelly silt loam, 15 to 25 percent slopes, extremely stony	462	0.2
58E	Watahala gravelly silt loam, 25 to 35 percent slopes, extremely stony	1,862	0.6
59D	Wharton-Gilpin-Berks complex, 15 to 25 percent slopes	249	*
60C	Wharton-Gilpin-Marrowbone complex, 8 to 15 percent slopes	24	*
61B	Wyrick-Marbie silt loams, 3 to 8 percent slopes	3,484	1.1
61C	Wyrick-Marbie silt loams, 8 to 15 percent slopes	3,602	1.2
W	Water	1,843	0.6
	Total	306,900	100.0

* Less than 0.1 percent.

Table 5.—Land Capability, Virginia Soil Management Group, and Yields per Acre of Crops and Pasture

(Yields are those that can be expected under a high level of management. They are for nonirrigated areas. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Map symbol and soil name	Land capability	Virginia Soil Management Group	Alfalfa hay	Corn silage	Grass-legume hay	Pasture	Burley tobacco
			Tons	Tons	Tons	AUM	Lbs
1E:							
Berks	7e	JJ	---	---	---	---	---
Chiswell	7e	JJ	---	---	---	---	---
1F:							
Berks	7e	JJ	---	---	---	---	---
Chiswell	7e	JJ	---	---	---	---	---
2D:							
Berks	6e	JJ	---	---	---	3.5	---
Gilpin	6e	U	---	---	---	4.5	---
2E:							
Berks	7e	JJ	---	---	---	---	---
Gilpin	7e	U	---	---	---	---	---
2F:							
Berks	7e	JJ	---	---	---	---	---
Gilpin	7e	U	---	---	---	---	---
3C:							
Berks	3e	JJ	---	13.0	2.6	4.0	1200
Groseclose	3e	M	5.3	19.0	3.5	6.5	2100
3D:							
Berks	6e	JJ	---	---	---	3.5	---
Groseclose	6e	M	---	---	---	6.0	---
4D:							
Berks	6e	JJ	---	---	---	3.5	---
Poplimento	6e	M	---	---	---	7.0	---
5C:							
Berks	3e	JJ	---	13.0	2.2	4.0	---
Weikert	6s	JJ	---	---	---	3.0	---
5D:							
Berks	6e	JJ	---	---	---	3.5	---
Weikert	6e	JJ	---	---	---	2.5	---
5E:							
Berks	7e	JJ	---	---	---	---	---
Weikert	7e	JJ	---	---	---	---	---

Table 5.—Land Capability, Virginia Soil Management Group, and Yields per Acre of Crops and Pasture—Continued

Map symbol and soil name	Land capability	Virginia Soil Management Group	Alfalfa hay	Corn silage	Grass-legume hay	Pasture	Burley tobacco
			Tons	Tons	Tons	AUM	Lbs
5F:							
Berks-------------	7e	JJ	---	---	---	---	---
Weikert-----------	7e	JJ	---	---	---	---	---
6E:							
Berks-------------	7e	JJ	---	---	---	---	---
Westmoreland------	7e	U	---	---	---	---	---
6F:							
Berks-------------	7e	JJ	---	---	---	---	---
Westmoreland------	7e	U	---	---	---	---	---
7E:							
Bland-------------	7e	Y	---	---	---	---	---
8D:							
Bland-------------	7s	Y	---	---	---	---	---
Rock outcrop------	8s	---	---	---	---	---	---
8E:							
Bland-------------	7s	Y	---	---	---	---	---
Rock outcrop------	8s	---	---	---	---	---	---
9D:							
Bland-------------	7s	Y	---	---	---	---	---
Rock outcrop------	8s	---	---	---	---	---	---
10D:							
Calvin------------	6e	JJ	---	---	---	3.5	---
11F:							
Calvin------------	7e	JJ	---	---	---	---	---
Rough-------------	7e	JJ	---	---	---	---	---
12C:							
Carbo-------------	6s	Y	---	---	---	5.0	---
Beech Grove-------	6s	JJ	---	---	---	2.0	---
12D:							
Carbo-------------	6s	Y	---	---	---	4.5	---
Beech Grove-------	6s	JJ	---	---	---	1.5	---
12E:							
Carbo-------------	6e	Y	---	---	---	4.0	---
Beech Grove-------	6e	JJ	---	---	---	1.0	---
12F:							
Carbo-------------	7e	Y	---	---	---	---	---
Beech Grove-------	7e	JJ	---	---	---	---	---

Table 5.—Land Capability, Virginia Soil Management Group, and Yields per Acre of Crops and Pasture—Continued

Map symbol and soil name	Land capability	Virginia Soil Management Group	Alfalfa hay	Corn silage	Grass-legume hay	Pasture	Burley tobacco
			Tons	Tons	Tons	AUM	Lbs
13C:							
Carbo-------------	8s	Y	---	---	---	---	---
Frederick---------	8s	M	---	---	---	---	---
Urban land--------	8s	---	---	---	---	---	---
14D:							
Carbo-------------	7s	Y	---	---	---	---	---
Rock outcrop------	8s	---	---	---	---	---	---
14E:							
Carbo-------------	7s	Y	---	---	---	---	---
Rock outcrop------	8s	---	---	---	---	---	---
15D:							
Carbo-------------	7s	Y	---	---	---	---	---
Rock outcrop------	8s	---	---	---	---	---	---
16C:							
Cedarcreek--------	6s	JJ	---	---	---	2.5	---
Sewell------------	6s	JJ	---	---	---	2.0	---
Rock outcrop------	8s	---	---	---	---	---	---
17A:							
Chagrin-----------	1	A	6.0	23.0	4.5	9.0	2000
18. Dumps, mine-Urban land							
19C:							
Frederick---------	3e	M	5.3	19.0	3.5	7.5	2600
19D:							
Frederick---------	4e	M	4.8	18.0	3.2	7.0	2300
19E:							
Frederick---------	6e	M	---	---	---	6.5	---
19F:							
Frederick---------	7e	M	---	---	---	---	---
20C:							
Frederick---------	3e	M	5.3	---	3.5	7.5	---
20D:							
Frederick---------	4e	M	4.8	---	3.2	7.0	---
21C:							
Frederick---------	3e	M	4.8	18.0	3.2	7.0	2300

Table 5.—Land Capability, Virginia Soil Management Group, and Yields per Acre of Crops and Pasture—Continued

Map symbol and soil name	Land capability	Virginia Soil Management Group	Alfalfa hay	Corn silage	Grass-legume hay	Pasture	Burley tobacco
			Tons	Tons	Tons	AUM	Lbs
21D:							
Frederick---------	4e	M	4.3	17.0	2.9	6.5	2000
21E:							
Frederick---------	6e	M	---	---	---	6.0	---
21F:							
Frederick---------	7e	M	---	---	---	---	---
22C:							
Frederick---------	3e	M	4.8	---	3.2	7.0	---
22D:							
Frederick---------	4e	M	4.3	---	2.9	6.5	---
23D:							
Gilpin------------	6e	U	---	---	---	4.5	---
24D:							
Gilpin------------	6e	U	---	---	---	4.0	---
Berks-------------	6e	JJ	---	---	---	3.0	---
24F:							
Gilpin------------	7e	U	---	---	---	---	---
Berks-------------	7e	JJ	---	---	---	---	---
25E:							
Gilpin------------	7e	U	---	---	---	---	---
Shelocta----------	7e	L	---	---	---	---	---
26F:							
Gilpin------------	7e	U	---	---	---	---	---
Shelocta----------	7e	L	---	---	---	---	---
27A:							
Grigsby-----------	1	A	6.0	23.0	4.5	9.0	2000
28C:							
Highsplint--------	6s	CC	---	---	---	3.5	---
28D:							
Highsplint--------	7s	CC	---	---	---	---	---
29F:							
Highsplint--------	7e	CC	---	---	---	---	---
Shelocta----------	7e	L	---	---	---	---	---
30A:							
Holly-------------	4w	NN	---	14.0	---	3.5	---
31D:							
Kaymine-----------	7s	JJ	---	---	---	---	---

Table 5.—Land Capability, Virginia Soil Management Group, and Yields per Acre of Crops and Pasture—Continued

Map symbol and soil name	Land capability	Virginia Soil Management Group	Alfalfa hay	Corn silage	Grass-legume hay	Pasture	Burley tobacco
			Tons	Tons	Tons	AUM	Lbs
32E:							
Kaymine-----------	7e	JJ	---	---	---	---	---
Cedarcreek--------	7e	JJ	---	---	---	---	---
33F:							
Kaymine-----------	7e	JJ	---	---	---	---	---
Fiveblock---------	7e	JJ	---	---	---	---	---
34C:							
Kaymine-----------	7s	JJ	---	---	---	---	---
Fiveblock---------	7s	JJ	---	---	---	---	---
Cedarcreek--------	7s	JJ	---	---	---	---	---
35C:							
Lily--------------	3e	U	3.5	17.0	3.1	5.0	1500
35D:							
Lily--------------	6e	U	---	---	---	4.5	---
35E:							
Lily--------------	7e	U	---	---	---	---	---
36A:							
Lobdell-----------	2w	G	5.5	21.0	4.5	8.0	1500
Orrville----------	4w	HH	---	16.0	3.0	4.0	---
37D:							
Mandy-------------	7s	JJ	---	---	---	---	---
Paddyknob---------	7s	JJ	---	---	---	---	---
Rock outcrop------	8s	---	---	---	---	---	---
38D:							
Marrowbone--------	7s	FF	---	---	---	---	---
38E:							
Marrowbone--------	7e	FF	---	---	---	---	---
38F:							
Marrowbone--------	7e	FF	---	---	---	---	---
39D:							
Marrowbone--------	4e	FF	---	14.0	2.8	4.0	---
Gilpin------------	4e	U	3.2	16.0	2.8	4.5	---
39E:							
Marrowbone--------	6e	FF	---	---	---	3.5	---
Gilpin------------	6e	U	---	---	---	4.0	---

Table 5.—Land Capability, Virginia Soil Management Group, and Yields per Acre of Crops and Pasture—Continued

Map symbol and soil name	Land capability	Virginia Soil Management Group	Alfalfa hay	Corn silage	Grass-legume hay	Pasture	Burley tobacco
			Tons	Tons	Tons	AUM	Lbs
39F:							
Marrowbone--------	7e	FF	---	---	---	---	---
Gilpin------------	7e	U	---	---	---	---	---
40F:							
Matewan-----------	7s	FF	---	---	---	---	---
Rock outcrop------	8s	---	---	---	---	---	---
41A:							
Ogles-------------	6s	CC	---	---	---	4.0	---
42C:							
Oriskany----------	7s	CC	---	---	---	---	---
42D:							
Oriskany----------	7s	CC	---	---	---	---	---
42E:							
Oriskany----------	7e	CC	---	---	---	---	---
43.							
Pits, quarry							
44C:							
Poplimento--------	3e	M	5.3	19.0	3.5	7.5	2200
Westmoreland------	3e	U	3.5	17.0	3.1	5.5	1800
45F:							
Ramsey------------	7s	JJ	---	---	---	---	---
Rock outcrop------	8s	---	---	---	---	---	---
46F:							
Rock outcrop------	8s	---	---	---	---	---	---
Beech Grove-------	7s	JJ	---	---	---	---	---
Benthole----------	7s	CC	---	---	---	---	---
47F:							
Sewell------------	7s	JJ	---	---	---	---	---
Kaymine-----------	7s	JJ	---	---	---	---	---
Rock outcrop------	8s	---	---	---	---	---	---
48E:							
Shelocta----------	7e	L	---	---	---	---	---
Cedarcreek--------	7e	JJ	---	---	---	---	---
49E:							
Shelocta----------	7e	L	---	---	---	---	---
Highsplint--------	7e	CC	---	---	---	---	---

Table 5.—Land Capability, Virginia Soil Management Group, and Yields per Acre of Crops and Pasture—Continued

Map symbol and soil name	Land capability	Virginia Soil Management Group	Alfalfa hay	Corn silage	Grass-legume hay	Pasture	Burley tobacco
			Tons	Tons	Tons	AUM	Lbs
50F:							
Shelocta----------	7e	L	---	---	---	---	---
Kaymine-----------	7e	JJ	---	---	---	---	---
51F:							
Stonecoal---------	7e	JJ	---	---	---	---	---
52C:							
Tumbling----------	3e	O	4.8	19.0	3.5	7.0	2600
52D:							
Tumbling----------	4e	O	4.4	18.0	3.2	6.5	2000
53E:							
Tumbling----------	7e	O	---	---	---	---	---
54F. Udorthents-Urban land							
55D:							
Wallen------------	7s	JJ	---	---	---	---	---
55F:							
Wallen------------	7e	JJ	---	---	---	---	---
56D:							
Wallen------------	7s	JJ	---	---	---	---	---
Rock outcrop------	8s	---	---	---	---	---	---
56F:							
Wallen------------	7s	JJ	---	---	---	---	---
Rock outcrop------	8s	---	---	---	---	---	---
57C:							
Watahala----------	3e	M	4.8	18.0	3.2	6.5	2000
57D:							
Watahala----------	4e	M	4.3	17.0	2.9	6.0	1700
57E:							
Watahala----------	6e	M	---	---	---	5.5	---
57F:							
Watahala----------	7e	M	---	---	---	---	---
58D:							
Watahala----------	7s	M	---	---	---	---	---
58E:							
Watahala----------	7s	M	---	---	---	---	---

Table 5.—Land Capability, Virginia Soil Management Group, and Yields per Acre of Crops and Pasture—Continued

Map symbol and soil name	Land capability	Virginia Soil Management Group	Alfalfa hay	Corn silage	Grass-legume hay	Pasture	Burley tobacco
			Tons	Tons	Tons	AUM	Lbs
59D:							
Wharton-----------	4e	AA	---	16.0	2.4	3.0	---
Gilpin------------	4e	U	3.2	16.0	2.8	4.5	---
Berks-------------	4e	JJ	---	13.0	2.4	3.5	---
60C:							
Wharton-----------	3e	AA	---	16.0	2.6	3.5	---
Gilpin------------	3e	U	3.5	17.0	3.1	5.0	---
Marrowbone--------	3e	FF	---	15.0	3.1	4.5	---
61B:							
Wyrick------------	2e	G	5.5	21.0	4.5	8.5	2900
Marbie------------	2e	W	---	18.0	3.0	4.0	2100
61C:							
Wyrick------------	3e	G	4.8	20.0	4.0	7.5	2800
Marbie------------	3e	W	---	16.0	2.6	3.5	2000
W.							
Water							

Table 6.—Prime Farmland

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland)

Map symbol	Map unit name
17A	Chagrin loam, 0 to 3 percent slopes, occasionally flooded
27A	Grigsby sandy loam, 0 to 3 percent slopes, occasionally flooded
36A	Lobdell-Orrville complex, 0 to 3 percent slopes, occasionally flooded (Lobdell soil only)
61B	Wyrick-Marbie silt loams, 3 to 8 percent slopes

Table 7.—Agricultural Waste Management, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
1E:					
Berks	50	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.88	Slope	1.00
		Too acid	0.37	Too acid	0.96
Chiswell	40	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
1F:					
Berks	45	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.88	Slope	1.00
		Too acid	0.37	Too acid	0.96
Chiswell	45	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
2D:					
Berks	45	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.88	Slope	1.00
		Too acid	0.37	Too acid	0.96
Gilpin	40	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.43	Slope	1.00
		Too acid	0.37	Too acid	0.96
2E:					
Berks	45	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.88	Slope	1.00
		Too acid	0.37	Too acid	0.96
Gilpin	40	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.43	Slope	1.00
		Too acid	0.37	Too acid	0.96
2F:					
Berks	45	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.88	Slope	1.00
		Too acid	0.37	Too acid	0.96
Gilpin	40	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.43	Slope	1.00
		Too acid	0.37	Too acid	0.96

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
3C:					
Berks	55	Somewhat limited		Very limited	
		Droughty	0.88	Low adsorption	1.00
		Slope	0.63	Too acid	0.96
		Too acid	0.37	Droughty	0.88
Groseclose	40	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Slope	0.63	Too acid	0.96
		Too acid	0.37	Slope	0.63
3D:					
Berks	55	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.88	Slope	1.00
		Too acid	0.37	Too acid	0.96
Groseclose	40	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	1.00	Slow water movement	1.00
		Too acid	0.37	Too acid	0.96
4D:					
Berks	50	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.88	Slope	1.00
		Too acid	0.37	Too acid	0.96
Poplimento	40	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Too acid	0.42
		Too acid	0.11	Slow water movement	0.37
5C:					
Berks	45	Somewhat limited		Very limited	
		Droughty	0.88	Low adsorption	1.00
		Slope	0.63	Too acid	0.96
		Too acid	0.37	Droughty	0.88
Weikert	45	Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00
		Slope	0.63	Low adsorption	1.00
5D:					
Berks	45	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.88	Slope	1.00
		Too acid	0.37	Too acid	0.96
Weikert	45	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
5E:					
Berks	65	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.88	Slope	1.00
		Too acid	0.37	Too acid	0.96
Weikert	25	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
5F:					
Berks	60	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.88	Slope	1.00
		Too acid	0.37	Too acid	0.96
Weikert	30	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
6E:					
Berks	55	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.88	Slope	1.00
		Too acid	0.37	Too acid	0.96
Westmoreland	35	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Too acid	0.37	Slope	1.00
				Too acid	0.96
6F:					
Berks	65	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.88	Slope	1.00
		Too acid	0.37	Too acid	0.96
Westmoreland	30	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Too acid	0.37	Slope	1.00
				Too acid	0.96
7E:					
Bland	85	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Slow water movement	0.50	Slope	1.00
				Too acid	0.85
		Droughty	0.31		
8D:					
Bland	80	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Slow water movement	0.50	Slope	1.00
				Too acid	0.85
		Droughty	0.31		
Rock outcrop	15	Not rated		Not rated	

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
8E:					
Bland	80	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Slow water movement	0.50	Slope	1.00
				Too acid	0.85
		Droughty	0.31		
Rock outcrop	15	Not rated		Not rated	
9D:					
Bland	80	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Slow water movement	0.50	Slope	1.00
				Too acid	0.85
		Droughty	0.31		
Rock outcrop	15	Not rated		Not rated	
10D:					
Calvin	85	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.84	Slope	1.00
		Too acid	0.62	Too acid	1.00
11F:					
Calvin	70	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.84	Slope	1.00
		Too acid	0.62	Too acid	1.00
Rough	20	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
12C:					
Carbo	50	Very limited		Very limited	
		Slow water movement	1.00	Low adsorption	1.00
				Slow water movement	1.00
		Droughty	0.90		
		Slope	0.63	Droughty	0.90
Beech Grove	30	Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00
		Slope	0.63	Low adsorption	1.00
12D:					
Carbo	60	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Slow water movement	1.00	Slope	1.00
				Slow water movement	1.00
		Droughty	0.90		
Beech Grove	30	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
12E:					
Carbo	60	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Slow water movement	1.00	Slope	1.00
		Droughty	0.90	Slow water movement	1.00
Beech Grove	30	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
12F:					
Carbo	60	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Slow water movement	1.00	Slope	1.00
		Droughty	0.90	Slow water movement	1.00
Beech Grove	30	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
13C:					
Carbo	35	Very limited		Very limited	
		Slow water movement	1.00	Low adsorption	1.00
		Droughty	0.90	Slow water movement	1.00
		Depth to bedrock	0.54	Droughty	0.90
Frederick	34	Somewhat limited		Somewhat limited	
		Too acid	0.32	Too acid	0.91
		Slope	0.01	Slope	0.01
Urban land	30	Not rated		Not rated	
14D:					
Carbo	60	Very limited		Very limited	
		Slow water movement	1.00	Low adsorption	1.00
		Slope	1.00	Slow water movement	1.00
		Droughty	0.90	Slope	1.00
Rock outcrop	15	Not rated		Not rated	
14E:					
Carbo	80	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Slow water movement	1.00	Slope	1.00
		Droughty	0.90	Slow water movement	1.00
Rock outcrop	15	Not rated		Not rated	

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
15D:					
Carbo----------------	60	Very limited		Very limited	
		Slow water movement	1.00	Low adsorption	1.00
		Slope	1.00	Slow water movement	1.00
		Droughty	0.90	Slope	1.00
Rock outcrop---------	30	Not rated		Not rated	
16C:					
Cedarcreek-----------	35	Somewhat limited		Very limited	
		Droughty	0.86	Too acid	1.00
		Too acid	0.68	Droughty	0.86
		Large stones content	0.53	Slope	0.01
Sewell---------------	30	Very limited		Very limited	
		Droughty	1.00	Too acid	1.00
		Large stones content	0.76	Droughty	1.00
		Too acid	0.68	Large stones on the surface	0.08
Rock outcrop---------	10	Not rated		Not rated	
17A:					
Chagrin--------------	90	Somewhat limited		Very limited	
		Flooding	0.60	Flooding	1.00
18:					
Dumps, mine----------	85	Not rated		Not rated	
Urban land-----------	15	Not rated		Not rated	
19C:					
Frederick------------	95	Somewhat limited		Somewhat limited	
		Slope	0.63	Too acid	0.91
		Too acid	0.32	Slope	0.63
19D:					
Frederick------------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.32	Too acid	0.91
19E:					
Frederick------------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.32	Too acid	0.91
19F:					
Frederick------------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.32	Too acid	0.91
20C:					
Frederick------------	95	Somewhat limited		Somewhat limited	
		Slope	0.63	Too acid	0.91
		Too acid	0.32	Slope	0.63

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
20D:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.32	Too acid	0.91
21C:					
Frederick-----------	95	Somewhat limited		Somewhat limited	
		Slope	0.63	Too acid	0.91
		Too acid	0.32	Slope	0.63
21D:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.32	Too acid	0.91
21E:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.32	Too acid	0.91
21F:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.32	Too acid	0.91
22C:					
Frederick-----------	95	Somewhat limited		Somewhat limited	
		Slope	0.63	Too acid	0.91
		Too acid	0.32	Slope	0.63
22D:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.32	Too acid	0.91
23D:					
Gilpin--------------	90	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.43	Slope	1.00
		Too acid	0.37	Too acid	0.96
24D:					
Gilpin--------------	55	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Too acid	0.50	Slope	1.00
		Droughty	0.28	Too acid	0.99
Berks---------------	30	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.92	Slope	1.00
		Too acid	0.50	Too acid	0.99
24F:					
Gilpin--------------	55	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Too acid	0.50	Slope	1.00
		Droughty	0.28	Too acid	0.99

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
24F:					
Berks	35	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.92	Slope	1.00
		Too acid	0.50	Too acid	0.99
25E:					
Gilpin	65	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Large stones content	0.47	Slope	1.00
		Droughty	0.43	Too acid	0.96
Shelocta	30	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	0.53	Too acid	0.99
		Too acid	0.50		
26F:					
Gilpin	60	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.43	Slope	1.00
		Too acid	0.37	Too acid	0.96
Shelocta	35	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	0.53	Too acid	0.99
		Too acid	0.50		
27A:					
Grigsby	95	Somewhat limited		Very limited	
		Flooding	0.60	Flooding	1.00
		Too acid	0.02	Too acid	0.07
28C:					
Highsplint	90	Somewhat limited		Somewhat limited	
		Slope	0.37	Too acid	0.55
		Large stones content	0.31	Slope	0.37
		Too acid	0.14		
28D:					
Highsplint	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	0.31	Too acid	0.55
		Too acid	0.14		
29F:					
Highsplint	55	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	0.31	Too acid	0.55
		Too acid	0.14		

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
29F:					
Shelocta	40	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.37	Too acid	0.96
		Large stones content	0.31		
30A:					
Holly	97	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Flooding	0.60	Flooding	1.00
31D:					
Kaymine	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00		
32E:					
Kaymine	85	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00		
Cedarcreek	15	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Too acid	1.00
				Droughty	0.86
		Droughty	0.86		
33F:					
Kaymine	50	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00		
Fiveblock	45	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Droughty	0.99
				Too acid	0.42
		Droughty	0.99		
34C:					
Kaymine	55	Very limited		Somewhat limited	
		Large stones content	1.00	Slope	0.01
		Slope	0.01		
Fiveblock	25	Very limited		Somewhat limited	
		Large stones content	1.00	Droughty	0.99
				Too acid	0.42
		Droughty	0.99	Large stones on the surface	0.02
		Too acid	0.11		
Cedarcreek	20	Very limited		Very limited	
		Large stones content	1.00	Too acid	1.00
				Droughty	0.86
		Droughty	0.86	Slope	0.01
		Too acid	0.68		

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
35C:					
Lily	90	Somewhat limited		Very limited	
		Depth to bedrock	0.65	Low adsorption	1.00
		Slope	0.63	Too acid	0.96
		Droughty	0.47	Depth to bedrock	0.65
35D:					
Lily	90	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Depth to bedrock	0.65	Slope	1.00
		Droughty	0.47	Too acid	0.96
35E:					
Lily	90	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Depth to bedrock	0.65	Slope	1.00
		Droughty	0.47	Too acid	0.96
36A:					
Lobdell	65	Very limited		Very limited	
		Depth to saturated zone	0.99	Flooding	1.00
		Flooding	0.60	Depth to saturated zone	0.99
		Too acid	0.02	Too acid	0.07
Orrville	30	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Flooding	0.60	Flooding	1.00
		Too acid	0.05	Too acid	0.21
37D:					
Mandy	45	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Too acid	0.89	Too acid	1.00
		Large stones content	0.76	Slope	1.00
Paddyknob	40	Very limited		Very limited	
		Droughty	1.00	Low adsorption	1.00
		Slope	1.00	Droughty	1.00
		Filtering capacity	0.99	Too acid	1.00
Rock outcrop	10	Not rated		Not rated	
38D:					
Marrowbone	85	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	1.00	Slope	1.00
		Large stones content	0.76	Droughty	1.00
38E:					
Marrowbone	85	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	1.00	Slope	1.00
		Large stones content	0.76	Droughty	1.00

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
38F:					
Marrowbone----------	85	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	1.00	Slope	1.00
		Large stones content	0.76	Droughty	1.00
39D:					
Marrowbone----------	50	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	1.00	Slope	1.00
		Too acid	0.27	Droughty	1.00
Gilpin--------------	45	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Too acid	0.50	Slope	1.00
		Droughty	0.28	Too acid	0.99
39E:					
Marrowbone----------	60	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	1.00	Slope	1.00
		Too acid	0.27	Droughty	1.00
Gilpin--------------	35	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Too acid	0.50	Slope	1.00
		Droughty	0.28	Too acid	0.99
39F:					
Marrowbone----------	75	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	1.00	Slope	1.00
		Too acid	0.27	Droughty	1.00
Gilpin--------------	15	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Too acid	0.50	Slope	1.00
		Droughty	0.28	Too acid	0.99
40F:					
Matewan-------------	45	Very limited		Very limited	
		Slope	1.00	Filtering capacity	1.00
		Filtering capacity	1.00	Low adsorption	1.00
		Large stones content	1.00	Slope	1.00
Rock outcrop--------	40	Not rated		Not rated	
41A:					
Ogles---------------	90	Very limited		Very limited	
		Large stones on the surface	1.00	Flooding	1.00
		Cobble content	0.87	Large stones on the surface	1.00
		Flooding	0.60	Cobble content	0.87

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
42C:					
Oriskany------------	75	Very limited		Very limited	
		Large stones content	1.00	Too acid	0.99
		Slope	0.63	Slope	0.63
		Cobble content	0.50	Cobble content	0.50
42D:					
Oriskany------------	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Too acid	0.99
		Cobble content	0.50	Cobble content	0.50
42E:					
Oriskany------------	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Too acid	0.99
		Cobble content	0.50	Cobble content	0.50
43:					
Pits, quarry--------	95	Not rated		Not rated	
44C:					
Poplimento----------	45	Somewhat limited		Somewhat limited	
		Slope	0.63	Slope	0.63
		Slow water movement	0.50	Too acid	0.42
		Too acid	0.11	Slow water movement	0.37
Westmoreland--------	40	Somewhat limited		Very limited	
		Slope	0.63	Low adsorption	1.00
		Too acid	0.37	Too acid	0.96
				Slope	0.63
45F:					
Ramsey--------------	75	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
Rock outcrop--------	15	Not rated		Not rated	
46F:					
Rock outcrop--------	45	Not rated		Not rated	
Beech Grove---------	25	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
Benthole------------	25	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00		

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
47F:					
Sewell--------------	55	Very limited		Very limited	
		Large stones content	1.00	Too acid	1.00
		Slope	1.00	Droughty	1.00
		Droughty	1.00	Slope	1.00
Kaymine-------------	30	Very limited		Very limited	
		Large stones content	1.00	Slope	1.00
		Slope	1.00		
Rock outcrop--------	10	Not rated		Not rated	
48E:					
Shelocta------------	70	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.37	Too acid	0.96
		Large stones content	0.31		
Cedarcreek----------	25	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Droughty	0.86	Too acid	1.00
		Too acid	0.68	Droughty	0.86
49E:					
Shelocta------------	50	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.37	Too acid	0.96
		Large stones content	0.31		
Highsplint----------	40	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	0.31	Too acid	0.55
		Too acid	0.14		
50F:					
Shelocta------------	55	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.37	Too acid	0.96
		Large stones content	0.31		
Kaymine-------------	40	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	0.31		
51F:					
Stonecoal-----------	85	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Droughty	1.00	Slope	1.00
		Cobble content	0.87	Cobble content	0.87

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
52C:					
Tumbling------------	85	Somewhat limited		Somewhat limited	
		Low adsorption	0.71	Too acid	0.67
		Slope	0.63	Slope	0.63
		Too acid	0.18	Low adsorption	0.09
52D:					
Tumbling------------	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Low adsorption	0.71	Too acid	0.67
		Too acid	0.18	Low adsorption	0.09
53E:					
Tumbling------------	85	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	0.94	Too acid	0.67
		Low adsorption	0.71	Low adsorption	0.09
54F:					
Udorthents----------	45	Not rated		Not rated	
Urban land----------	30	Not rated		Not rated	
55D:					
Wallen--------------	90	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Droughty	1.00	Low adsorption	1.00
		Depth to bedrock	0.90	Slope	1.00
55F:					
Wallen--------------	90	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Droughty	1.00	Low adsorption	1.00
		Depth to bedrock	0.90	Slope	1.00
56D:					
Wallen--------------	65	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Droughty	1.00	Low adsorption	1.00
		Large stones content	1.00	Slope	1.00
Rock outcrop--------	25	Not rated		Not rated	
56F:					
Wallen--------------	65	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Droughty	1.00	Low adsorption	1.00
		Large stones content	1.00	Slope	1.00
Rock outcrop--------	25	Not rated		Not rated	
57C:					
Watahala------------	95	Somewhat limited		Very limited	
		Too acid	0.78	Too acid	1.00
		Droughty	0.67	Droughty	0.67
		Slope	0.63	Slope	0.63

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
57D:					
Watahala------------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.78	Too acid	1.00
		Droughty	0.67	Droughty	0.67
57E:					
Watahala------------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.78	Too acid	1.00
		Droughty	0.67	Droughty	0.67
57F:					
Watahala------------	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.78	Too acid	1.00
		Droughty	0.67	Droughty	0.67
58D:					
Watahala------------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Too acid	1.00
				Droughty	0.67
		Too acid	0.78		
58E:					
Watahala------------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	1.00	Too acid	1.00
				Droughty	0.67
		Too acid	0.78		
59D:					
Wharton-------------	45	Very limited		Very limited	
		Slope	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Low adsorption	1.00
		Slow water movement	0.86	Slope	1.00
Gilpin--------------	40	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Too acid	0.50	Slope	1.00
		Droughty	0.28	Too acid	0.99
Berks---------------	15	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.92	Slope	1.00
		Too acid	0.50	Too acid	0.99
60C:					
Wharton-------------	45	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	0.86	Low adsorption	1.00
				Too acid	0.96
		Too acid	0.37		

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
60C:					
Gilpin	35	Somewhat limited		Very limited	
		Too acid	0.50	Low adsorption	1.00
		Droughty	0.28	Too acid	0.99
		Slope	0.16	Droughty	0.28
Marrowbone	20	Very limited		Very limited	
		Droughty	1.00	Low adsorption	1.00
		Too acid	0.27	Droughty	1.00
		Depth to bedrock	0.20	Too acid	0.85
61B:					
Wyrick	55	Somewhat limited		Somewhat limited	
		Too acid	0.37	Too acid	0.96
Marbie	40	Very limited		Very limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99
		Too acid	0.37	Too acid	0.96
		Depth to cemented pan	0.06	Depth to cemented pan	0.06
61C:					
Wyrick	55	Somewhat limited		Somewhat limited	
		Slope	0.63	Too acid	0.96
		Too acid	0.37	Slope	0.63
Marbie	40	Very limited		Very limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99
		Slope	0.63	Too acid	0.96
		Too acid	0.37	Slope	0.63
W:					
Water	100	Not rated		Not rated	

Table 7.—Agricultural Waste Management, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
1E:					
Berks	50	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00
Chiswell	40	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Too steep for surface application	1.00	Seepage	1.00
1F:					
Berks	45	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00
Chiswell	45	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Too steep for surface application	1.00	Seepage	1.00
2D:					
Berks	45	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00
Gilpin	40	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
2E:					
Berks	45	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00
Gilpin	40	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00
2F:					
Berks	45	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00
Gilpin	40	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00
3C:					
Berks	55	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too acid	0.96	Seepage	1.00
		Droughty	0.88	Too steep for surface application	1.00
Groseclose	40	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Too acid	0.96	Too acid	0.96

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
3D:					
Berks	55	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00
Groseclose	40	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Slow water movement	1.00	Too acid	0.96
4D:					
Berks	50	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00
Poplimento	40	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.42	Too acid	0.42
5C:					
Berks	45	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too acid	0.96	Seepage	1.00
		Droughty	0.88	Too steep for surface application	1.00
Weikert	45	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Too steep for surface application	1.00	Too steep for surface application	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
5D:					
Berks	45	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00
Weikert	45	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Too steep for surface application	1.00	Too steep for surface application	1.00
5E:					
Berks	65	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00
Weikert	25	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Too steep for surface application	1.00	Too steep for surface application	1.00
5F:					
Berks	60	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00
Weikert	30	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Too steep for surface application	1.00	Too steep for surface application	1.00
6E:					
Berks	55	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation		Overland flow of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
6E:					
Westmoreland--------	35	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.96	Too acid	0.96
6F:					
Berks---------------	65	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00
Westmoreland--------	30	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.96	Too acid	0.96
7E:					
Bland---------------	85	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.85	Seepage	1.00
8D:					
Bland---------------	80	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.85	Too steep for surface application	1.00
Rock outcrop--------	15	Not rated		Not rated	
8E:					
Bland---------------	80	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.85	Seepage	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
8E:					
Rock outcrop	15	Not rated		Not rated	
9D:					
Bland	80	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.85	Too steep for surface application	1.00
Rock outcrop	15	Not rated		Not rated	
10D:					
Calvin	85	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Too acid	1.00	Too steep for surface application	1.00
11F:					
Calvin	70	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Too acid	1.00	Too steep for surface application	1.00
Rough	20	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Too steep for surface application	1.00	Too steep for surface application	1.00
12C:					
Carbo	50	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Seepage	1.00
		Droughty	0.90	Too steep for surface application	1.00
Beech Grove	30	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Seepage	1.00
		Too steep for surface application	1.00	Too steep for surface application	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
12D:					
Carbo	60	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Seepage	1.00
Beech Grove	30	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Too steep for surface application	1.00	Seepage	1.00
12E:					
Carbo	60	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Seepage	1.00
Beech Grove	30	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Too steep for surface application	1.00	Seepage	1.00
12F:					
Carbo	60	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Seepage	1.00
Beech Grove	30	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Too steep for surface application	1.00	Seepage	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
13C:					
Carbo	35	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Too steep for surface application	1.00	Seepage	1.00
		Droughty	0.90	Too acid	0.31
Frederick	34	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.91	Too acid	0.91
		Too steep for sprinkler application	0.10	Too steep for surface application	0.22
Urban land	30	Not rated		Not rated	
14D:					
Carbo	60	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
Rock outcrop	15	Not rated		Not rated	
14E:					
Carbo	80	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Seepage	1.00
Rock outcrop	15	Not rated		Not rated	
15D:					
Carbo	60	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
Rock outcrop	30	Not rated		Not rated	

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation		Overland flow of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
16C:					
Cedarcreek----------	35	Very limited		Very limited	
		Too acid	1.00	Seepage	1.00
		Too steep for surface application	1.00	Too acid	1.00
				Stone content	0.32
		Droughty	0.86		
Sewell--------------	30	Very limited		Very limited	
		Too acid	1.00	Seepage	1.00
		Droughty	1.00	Too acid	1.00
		Too steep for surface application	1.00	Stone content	1.00
Rock outcrop--------	10	Not rated		Not rated	
17A:					
Chagrin-------------	90	Somewhat limited		Very limited	
		Flooding	0.60	Flooding	1.00
				Seepage	1.00
18:					
Dumps, mine---------	85	Not rated		Not rated	
Urban land----------	15	Not rated		Not rated	
19C:					
Frederick-----------	95	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
				Too steep for surface application	1.00
		Too acid	0.91		
		Too steep for sprinkler application	0.78	Too acid	0.91
19D:					
Frederick-----------	95	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
				Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Too acid	0.91
		Too acid	0.91		
19E:					
Frederick-----------	95	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
				Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Too acid	0.91
		Too acid	0.91		

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
19F:					
Frederick-----------	95	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.91	Too acid	0.91
20C:					
Frederick-----------	95	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.91	Too steep for surface application	1.00
		Too steep for sprinkler application	0.78	Too acid	0.91
20D:					
Frederick-----------	95	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.91	Too acid	0.91
21C:					
Frederick-----------	95	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.91	Too steep for surface application	1.00
		Too steep for sprinkler application	0.78	Too acid	0.91
21D:					
Frederick-----------	95	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.91	Too acid	0.91
21E:					
Frederick-----------	95	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.91	Too acid	0.91

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
21F:					
Frederick-----------	95	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.91	Too acid	0.91
22C:					
Frederick-----------	95	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.91	Too steep for surface application	1.00
		Too steep for sprinkler application	0.78	Too acid	0.91
22D:					
Frederick-----------	95	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.91	Too acid	0.91
23D:					
Gilpin--------------	90	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00
24D:					
Gilpin--------------	55	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.99	Seepage	1.00
Berks---------------	30	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.99	Seepage	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
24F:					
Gilpin	55	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.99	Seepage	1.00
Berks	35	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.99	Seepage	1.00
25E:					
Gilpin	65	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00
Shelocta	30	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.99	Too acid	0.99
26F:					
Gilpin	60	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00
Shelocta	35	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.99	Too acid	0.99

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
27A:					
Grigsby	95	Somewhat limited		Very limited	
		Flooding	0.60	Flooding	1.00
		Too acid	0.07	Seepage	1.00
				Too acid	0.07
28C:					
Highsplint	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	0.60	Too steep for surface application	0.94
		Too acid	0.55	Too acid	0.55
28D:					
Highsplint	90	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.55	Too acid	0.55
29F:					
Highsplint	55	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.55	Too acid	0.55
Shelocta	40	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.96	Too acid	0.96
30A:					
Holly	97	Very limited		Very limited	
		Ponding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Ponding	1.00
		Flooding	0.60	Depth to saturated zone	1.00
31D:					
Kaymine	90	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
				Cobble content	0.27

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
32E:					
Kaymine	85	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
				Cobble content	0.27
Cedarcreek	15	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
				Too acid	1.00
		Too acid	1.00		
33F:					
Kaymine	50	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
				Cobble content	0.27
Fiveblock	45	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
				Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Stone content	1.00
		Droughty	0.99		
34C:					
Kaymine	55	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
				Cobble content	0.27
				Too steep for surface application	0.22
		Too steep for sprinkler application	0.10		
Fiveblock	25	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
				Stone content	1.00
				Too acid	0.42
		Droughty	0.99		
		Too acid	0.42		
Cedarcreek	20	Very limited		Very limited	
		Too acid	1.00	Seepage	1.00
		Too steep for surface application	1.00	Too acid	1.00
				Stone content	0.32
		Droughty	0.86		

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
35C:					
Lily	90	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too acid	0.96	Seepage	1.00
		Too steep for sprinkler application	0.78	Too steep for surface application	1.00
35D:					
Lily	90	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00
35E:					
Lily	90	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.96	Seepage	1.00
36A:					
Lobdell	65	Very limited		Very limited	
		Depth to saturated zone	0.99	Flooding	1.00
		Flooding	0.60	Seepage	1.00
		Too acid	0.07	Depth to saturated zone	0.99
Orrville	30	Very limited		Very limited	
		Depth to saturated zone	1.00	Flooding	1.00
		Flooding	0.60	Depth to saturated zone	1.00
		Too acid	0.21	Seepage	1.00
37D:					
Mandy	45	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too acid	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too acid	1.00
Paddyknob	40	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Droughty	1.00	Depth to bedrock	1.00
		Too acid	1.00	Too acid	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
37D:					
Rock outcrop--------	10	Not rated		Not rated	
38D:					
Marrowbone----------	85	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Droughty	1.00	Too steep for surface application	1.00
38E:					
Marrowbone----------	85	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Droughty	1.00	Too steep for surface application	1.00
38F:					
Marrowbone----------	85	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Droughty	1.00	Too steep for surface application	1.00
39D:					
Marrowbone----------	50	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Droughty	1.00	Too steep for surface application	1.00
Gilpin--------------	45	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.99	Seepage	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
39E:					
Marrowbone----------	60	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Droughty	1.00	Too steep for surface application	1.00
Gilpin--------------	35	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.99	Seepage	1.00
39F:					
Marrowbone----------	75	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Droughty	1.00	Too steep for surface application	1.00
Gilpin--------------	15	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.99	Seepage	1.00
40F:					
Matewan-------------	45	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
Rock outcrop--------	40	Not rated		Not rated	
41A:					
Ogles---------------	90	Very limited		Very limited	
		Large stones on the surface	1.00	Flooding	1.00
		Cobble content	0.87	Seepage	1.00
		Flooding	0.60	Stone content	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
42C:					
Oriskany------------	75	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.99	Too steep for surface application	1.00
		Too steep for sprinkler application	0.78	Too acid	0.99
42D:					
Oriskany------------	75	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.99	Too acid	0.99
42E:					
Oriskany------------	75	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.99	Too acid	0.99
43:					
Pits, quarry--------	95	Not rated		Not rated	
44C:					
Poplimento----------	45	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	0.78	Too steep for surface application	1.00
		Too acid	0.42	Too acid	0.42
Westmoreland--------	40	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.96	Too steep for surface application	1.00
		Too steep for sprinkler application	0.78	Too acid	0.96
45F:					
Ramsey--------------	75	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Too steep for surface application	1.00	Too steep for surface application	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
45F:					
Rock outcrop--------	15	Not rated		Not rated	
46F:					
Rock outcrop--------	45	Not rated		Not rated	
Beech Grove---------	25	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Too steep for surface application	1.00	Seepage	1.00
Benthole------------	25	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
				Cobble content	1.00
47F:					
Sewell--------------	55	Very limited		Very limited	
		Too acid	1.00	Seepage	1.00
		Droughty	1.00	Too acid	1.00
		Too steep for surface application	1.00	Stone content	1.00
Kaymine-------------	30	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
				Cobble content	0.27
Rock outcrop--------	10	Not rated		Not rated	
48E:					
Shelocta------------	70	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.96	Too acid	0.96
Cedarcreek----------	25	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	1.00	Too acid	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
49E:					
Shelocta	50	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.96	Too acid	0.96
Highsplint	40	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.55	Too acid	0.55
50F:					
Shelocta	55	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.96	Too acid	0.96
Kaymine	40	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
				Cobble content	0.27
51F:					
Stonecoal	85	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Cobble content	0.87
52C:					
Tumbling	85	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	0.78	Too steep for surface application	1.00
		Low adsorption	0.71	Low adsorption	0.71

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
52D:					
Tumbling------------	80	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Low adsorption	0.71	Low adsorption	0.71
53E:					
Tumbling------------	85	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Low adsorption	0.71	Low adsorption	0.71
54F:					
Udorthents----------	45	Not rated		Not rated	
Urban land----------	30	Not rated		Not rated	
55D:					
Wallen--------------	90	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
55F:					
Wallen--------------	90	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
56D:					
Wallen--------------	65	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
Rock outcrop--------	25	Not rated		Not rated	

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
56F:					
Wallen	65	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
Rock outcrop	25	Not rated		Not rated	
57C:					
Watahala	95	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	1.00	Too acid	1.00
		Too steep for sprinkler application	0.78	Too steep for surface application	1.00
57D:					
Watahala	95	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	1.00	Too acid	1.00
57E:					
Watahala	95	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	1.00	Too acid	1.00
57F:					
Watahala	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	1.00	Too acid	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation		Overland flow of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
58D:					
Watahala	95	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	1.00	Too acid	1.00
58E:					
Watahala	95	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	1.00	Too acid	1.00
59D:					
Wharton	45	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Too acid	0.96
Gilpin	40	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.99	Seepage	1.00
Berks	15	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	0.99	Seepage	1.00
60C:					
Wharton	45	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too steep for surface application	1.00	Too acid	0.96
		Too acid	0.96	Seepage	0.94

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
60C:					
Gilpin	35	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too acid	0.99	Seepage	1.00
		Too steep for sprinkler application	0.40	Too acid	0.99
Marrowbone	20	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Droughty	1.00	Depth to bedrock	1.00
		Too acid	0.85	Too acid	0.85
61B:					
Wyrick	55	Somewhat limited		Very limited	
		Too acid	0.96	Seepage	1.00
		Too steep for surface application	0.68	Too acid	0.96
Marbie	40	Very limited		Very limited	
		Depth to saturated zone	0.99	Depth to cemented pan	1.00
		Too acid	0.96	Seepage	1.00
		Too steep for surface application	0.68	Depth to saturated zone	0.99
61C:					
Wyrick	55	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.96	Too steep for surface application	1.00
		Too steep for sprinkler application	0.78	Too acid	0.96
Marbie	40	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	0.99	Seepage	1.00
		Too acid	0.96	Too steep for surface application	1.00
W:					
Water	100	Not rated		Not rated	

Table 7.—Agricultural Waste Management, Part III

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
1E:					
Berks	50	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
Chiswell	40	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
1F:					
Berks	45	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
Chiswell	45	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
2D:					
Berks	45	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
2D:					
Gilpin	40	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
2E:					
Berks	45	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
Gilpin	40	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
2F:					
Berks	45	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
Gilpin	40	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
3C:					
Berks	55	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
3C:					
Groseclose----------	40	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Slow water movement	0.96
3D:					
Berks---------------	55	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
Groseclose----------	40	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Slow water movement	0.96
4D:					
Berks---------------	50	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
Poplimento----------	40	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Too acid	0.42
5C:					
Berks---------------	45	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
5C:					
Weikert	45	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
5D:					
Berks	45	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
Weikert	45	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
5E:					
Berks	65	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
Weikert	25	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
5F:					
Berks	60	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
5F:					
Weikert	30	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
6E:					
Berks	55	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
Westmoreland	35	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
		Slow water movement	1.00	Too acid	0.96
6F:					
Berks	65	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
Westmoreland	30	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
		Slow water movement	1.00	Too acid	0.96
7E:					
Bland	85	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8D:					
Bland	80	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
Rock outcrop	15	Not rated		Not rated	
8E:					
Bland	80	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
Rock outcrop	15	Not rated		Not rated	
9D:					
Bland	80	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
Rock outcrop	15	Not rated		Not rated	
10D:					
Calvin	85	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
11F:					
Calvin	70	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
11F:					
Rough	20	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Too acid	0.42	Too steep for sprinkler irrigation	1.00
12C:					
Carbo	50	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
Beech Grove	30	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
12D:					
Carbo	60	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
Beech Grove	30	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
12E:					
Carbo	60	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
12E:					
Beech Grove	30	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
12F:					
Carbo	60	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
Beech Grove	30	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
13C:					
Carbo	35	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slope	1.00	Slow water movement	0.96
Frederick	34	Very limited		Very limited	
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too acid	0.91
		Too acid	0.03	Too steep for sprinkler irrigation	0.22
Urban land	30	Not rated		Not rated	
14D:					
Carbo	60	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
Rock outcrop	15	Not rated		Not rated	

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
14E:					
Carbo	80	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
Rock outcrop	15	Not rated		Not rated	
15D:					
Carbo	60	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
Rock outcrop	30	Not rated		Not rated	
16C:					
Cedarcreek	35	Very limited		Very limited	
		Slope	1.00	Too acid	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Stone content	0.46	Too steep for sprinkler irrigation	0.22
Sewell	30	Very limited		Very limited	
		Stone content	1.00	Too acid	1.00
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	0.78	Too steep for sprinkler irrigation	0.22
Rock outcrop	10	Not rated		Not rated	
17A:					
Chagrin	90	Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Flooding	0.60
		Slow water movement	1.00		
		Flooding	0.60		
18:					
Dumps, mine	85	Not rated		Not rated	
Urban land	15	Not rated		Not rated	

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
19C:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00		
		Too acid	0.03	Too steep for sprinkler irrigation	1.00
				Too acid	0.91
19D:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00		
		Too acid	0.03	Too steep for sprinkler irrigation	1.00
				Too acid	0.91
19E:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00		
		Too acid movement	0.03	Too steep for sprinkler irrigation	1.00
				Too acid	0.91
19F:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00		
		Too acid	0.03	Too steep for sprinkler irrigation	1.00
				Too acid	0.91
20C:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00		
		Too acid	0.03	Too steep for sprinkler irrigation	1.00
				Too acid	0.91
20D:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00		
		Too acid	0.03	Too steep for sprinkler irrigation	1.00
				Too acid	0.91

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
21C:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Too acid	0.03	Too acid	0.91
21D:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Too acid	0.03	Too acid	0.91
21E:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Too acid	0.03	Too acid	0.91
21F:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Too acid	0.03	Too acid	0.91
22C:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Too acid	0.03	Too acid	0.91
22D:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Too acid	0.03	Too acid	0.91

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
23D:					
Gilpin	90	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
24D:					
Gilpin	55	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
Berks	30	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
24F:					
Gilpin	55	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
Berks	35	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
25E:					
Gilpin	65	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
25E:					
Shelocta	30	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Too acid	0.99
26F:					
Gilpin	60	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
Shelocta	35	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Too acid	0.99
27A:					
Grigsby	95	Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Flooding	0.60
		Slow water movement	0.62	Too acid	0.07
		Flooding	0.60		
28C:					
Highsplint	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	0.94
		Cobble content	0.20	Too acid	0.55
28D:					
Highsplint	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Cobble content	0.20	Too acid	0.55

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
29F:					
Highsplint	55	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Cobble content	0.20	Too acid	0.55
Shelocta	40	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Too acid	0.96
30A:					
Holly	97	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00	Flooding	0.60
31D:					
Kaymine	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Stone content	0.63		
32E:					
Kaymine	85	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Stone content	0.63		
Cedarcreek	15	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Stone content	0.46	Too acid	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
33F:					
Kaymine	50	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00		
		Stone content	0.63	Too steep for sprinkler irrigation	1.00
Fiveblock	45	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Stone content	1.00		
		Slow water movement	0.78		
				Too steep for sprinkler irrigation	1.00
				Too acid	0.42
34C:					
Kaymine	55	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00		
		Stone content	0.63	Too steep for sprinkler irrigation	0.22
Fiveblock	25	Very limited		Very limited	
		Stone content	1.00	Too steep for surface application	1.00
		Slope	1.00		
		Slow water movement	0.78		
				Too acid	0.42
				Too steep for sprinkler irrigation	0.22
Cedarcreek	20	Very limited		Very limited	
		Slope	1.00	Too acid	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Stone content	0.46		
				Too steep for sprinkler irrigation	0.22
35C:					
Lily	90	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.62		
				Too steep for sprinkler irrigation	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
35D:					
Lily	90	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.62	Too steep for sprinkler irrigation	1.00
35E:					
Lily	90	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.62	Too steep for sprinkler irrigation	1.00
36A:					
Lobdell	65	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Slow water movement	1.00	Flooding	0.60
		Flooding	0.60	Too acid	0.07
Orrville	30	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00	Flooding	0.60
		Flooding	0.60	Too acid	0.21
37D:					
Mandy	45	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too acid	1.00
Paddyknob	40	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Too acid	0.55	Too acid	1.00
Rock outcrop	10	Not rated		Not rated	
38D:					
Marrowbone	85	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
38E:					
Marrowbone	85	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
38F:					
Marrowbone	85	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
39D:					
Marrowbone	50	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
Gilpin	45	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
39E:					
Marrowbone	60	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
Gilpin	35	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
39F:					
Marrowbone	75	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
Gilpin	15	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
40F:					
Matewan	45	Very limited		Very limited	
		Slope	1.00	Filtering capacity	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Stone content	0.01	Too steep for surface application	1.00
Rock outcrop	40	Not rated		Not rated	
41A:					
Ogles	90	Very limited		Very limited	
		Depth to saturated zone	1.00	Large stones on the surface	1.00
		Stone content	1.00	Cobble content	0.87
		Cobble content	1.00	Flooding	0.60
42C:					
Oriskany	75	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Cobble content	0.61	Too steep for sprinkler irrigation	1.00
		Slow water movement	0.32	Too acid	0.99
42D:					
Oriskany	75	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Cobble content	0.61	Too steep for sprinkler irrigation	1.00
		Slow water movement	0.32	Too acid	0.99

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
42E:					
Oriskany	75	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Cobble content	0.61	Too steep for sprinkler irrigation	1.00
		Slow water movement	0.32	Too acid	0.99
43:					
Pits, quarry	95	Not rated		Not rated	
44C:					
Poplimento	45	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Too acid	0.42
Westmoreland	40	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
		Slow water movement	1.00	Too acid	0.96
45F:					
Ramsey	75	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
				Too steep for sprinkler irrigation	1.00
Rock outcrop	15	Not rated		Not rated	
46F:					
Rock outcrop	45	Not rated		Not rated	
Beech Grove	25	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
46F:					
Benthole	25	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Cobble content	1.00		
47F:					
Sewell	55	Very limited		Very limited	
		Stone content	1.00	Too acid	1.00
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	0.78	Too steep for sprinkler irrigation	1.00
Kaymine	30	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Stone content	0.63		
Rock outcrop	10	Not rated		Not rated	
48E:					
Shelocta	70	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Too acid	0.96
Cedarcreek	25	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Stone content	0.46	Too acid	1.00
49E:					
Shelocta	50	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Too acid	0.96

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
49E:					
Highsplint----------	40	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Cobble content	0.20	Too acid	0.55
50F:					
Shelocta-----------	55	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Too acid	0.96
Kaymine------------	40	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Stone content	0.63		
51F:					
Stonecoal----------	85	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Cobble content	0.87	Too steep for sprinkler irrigation	1.00
				Cobble content	0.87
52C:					
Tumbling-----------	85	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Low adsorption	0.71
52D:					
Tumbling-----------	80	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Low adsorption	0.71

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
53E:					
Tumbling	85	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Low adsorption	0.71
54F:					
Udorthents	45	Not rated		Not rated	
Urban land	30	Not rated		Not rated	
55D:					
Wallen	90	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
55F:					
Wallen	90	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
56D:					
Wallen	65	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
Rock outcrop	25	Not rated		Not rated	
56F:					
Wallen	65	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
Rock outcrop	25	Not rated		Not rated	

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
57C:					
Watahala------------	95	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too acid	1.00
		Too acid	0.21	Too steep for sprinkler irrigation	1.00
57D:					
Watahala------------	95	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Too acid	0.21	Too acid	1.00
57E:					
Watahala------------	95	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Too acid	0.21	Too acid	1.00
57F:					
Watahala------------	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Too acid	0.21	Too acid	1.00
58D:					
Watahala------------	95	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Too acid	0.21	Too acid	1.00
58E:					
Watahala------------	95	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Too acid	0.21	Too acid	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
59D:					
Wharton	45	Very limited		Very limited	
		Slope	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Depth to saturated zone	1.00	Too steep for sprinkler irrigation	1.00
Gilpin	40	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
Berks	15	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
60C:					
Wharton	45	Very limited		Very limited	
		Slope	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Depth to saturated zone	1.00	Too acid	0.96
Gilpin	35	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too acid	0.99
Marrowbone	20	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too acid	0.85
61B:					
Wyrick	55	Very limited		Somewhat limited	
		Slow water movement	1.00	Too acid	0.96
		Slope	0.50	Too steep for surface application	0.68

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
61B:					
Marbie	40	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Slow water movement	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Too acid	0.96
61C:					
Wyrick	55	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Too acid	0.96
Marbie	40	Very limited		Very limited	
		Slope	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
W:					
Water	100	Not rated		Not rated	

Table 8.—Forestland Productivity

(Absence of an entry indicates that information was not available)

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
1E:				
Berks	northern red oak	65	47	northern red oak, chestnut oak, eastern white pine, black oak, white oak
	black oak	60	43	
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
Chiswell	chestnut oak	50	35	chestnut oak, eastern white pine, black oak, white oak, pitch pine, shortleaf pine
	scarlet oak	50	35	
	black oak	50	35	
	white oak	50	35	
	Virginia pine	50	---	
	pitch pine	50	---	
	shortleaf pine	50	---	
1F:				
Berks	northern red oak	65	47	northern red oak, chestnut oak, eastern white pine, black oak, white oak
	black oak	60	43	
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
Chiswell	chestnut oak	50	35	chestnut oak, eastern white pine, black oak, white oak, pitch pine, shortleaf pine
	scarlet oak	50	35	
	black oak	50	35	
	white oak	50	35	
	Virginia pine	50	---	
	pitch pine	50	---	
	shortleaf pine	50	---	
2D:				
Berks	black oak	60	43	chestnut oak, eastern white pine, black oak, white oak
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
Gilpin	northern red oak	70	52	northern red oak, eastern white pine, white oak, yellow-poplar
	black oak	65	47	
	red maple	80	62	
	white oak	65	47	
	yellow-poplar	85	80	
	hickory	60	---	
2E:				
Berks	black oak	60	43	chestnut oak, eastern white pine, black oak, white oak
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
Gilpin	northern red oak	70	52	northern red oak, eastern white pine, white oak, yellow-poplar
	black oak	65	47	
	red maple	80	62	
	white oak	65	47	
	yellow-poplar	85	80	
	hickory	60	---	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
2F:				
Berks	black oak	60	43	chestnut oak, eastern white pine, black oak, white oak
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
Gilpin	northern red oak	70	52	northern red oak, eastern white pine, white oak, yellow-poplar
	black oak	65	47	
	red maple	80	62	
	white oak	65	47	
	yellow-poplar	85	80	
	hickory	60	---	
3C:				
Berks	northern red oak	65	47	northern red oak, chestnut oak, eastern white pine, black oak, white oak
	black oak	60	43	
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
Groseclose	northern red oak	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	white oak	70	52	
	yellow-poplar	90	90	
	red maple	65	---	
	sugar maple	65	41	
3D:				
Berks	northern red oak	65	47	northern red oak, chestnut oak, eastern white pine, black oak, white oak
	black oak	60	43	
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
Groseclose	northern red oak	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	white oak	70	52	
	yellow-poplar	90	90	
	red maple	65	---	
	sugar maple	65	41	
4D:				
Berks	northern red oak	65	47	hickory, northern red oak, chestnut oak, eastern white pine, black oak, white oak
	black oak	60	43	
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
Poplimento	northern red oak	80	62	black oak, northern red oak, sugar maple, white ash, white oak, yellow-poplar
	black locust	85	67	
	yellow-poplar	90	90	
	black oak	80	62	
	sugar maple	75	48	
	white ash	80	62	
	hickory	75	---	
	white oak	80	---	
	chestnut oak	80	---	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
5C:				
Berks	black oak	60	43	chestnut oak, eastern white pine, black oak, white oak
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
Weikert	chestnut oak	50	35	chestnut oak, eastern white pine, black oak, white oak, pitch pine, shortleaf pine
	scarlet oak	50	35	
	black oak	50	35	
	white oak	50	35	
	Virginia pine	50	---	
	pitch pine	50	---	
	shortleaf pine	50	---	
5D:				
Berks	black oak	60	43	chestnut oak, eastern white pine, black oak, white oak
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
Weikert	chestnut oak	50	35	chestnut oak, eastern white pine, black oak, white oak, pitch pine, shortleaf pine
	scarlet oak	50	35	
	black oak	50	35	
	white oak	50	35	
	Virginia pine	50	---	
	pitch pine	50	---	
	shortleaf pine	50	---	
5E:				
Berks	black oak	60	43	chestnut oak, eastern white pine, black oak, white oak
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
Weikert	chestnut oak	50	35	chestnut oak, eastern white pine, black oak, white oak, pitch pine, shortleaf pine
	scarlet oak	50	35	
	black oak	50	35	
	white oak	50	35	
	Virginia pine	50	---	
	pitch pine	50	---	
	shortleaf pine	50	---	
5F:				
Berks	black oak	60	43	chestnut oak, eastern white pine, black oak, white oak
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
Weikert	chestnut oak	50	35	chestnut oak, eastern white pine, black oak, white oak, pitch pine, shortleaf pine
	scarlet oak	50	35	
	black oak	50	35	
	white oak	50	35	
	Virginia pine	50	---	
	pitch pine	50	---	
	shortleaf pine	50	---	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
6E:				
Berks	northern red oak	65	47	northern red oak, chestnut oak, eastern white pine, black oak, white oak
	black oak	60	43	
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
Westmoreland	northern red oak	73	57	northern red oak, eastern white pine, black oak, white oak, yellow-poplar
	black oak	65	47	
	white oak	65	47	
	red maple	60	---	
	hickory	60	---	
	yellow-poplar	90	90	
6F:				
Berks	northern red oak	65	47	northern red oak, chestnut oak, eastern white pine, black oak, white oak
	black oak	60	43	
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
Westmoreland	northern red oak	73	57	northern red oak, eastern white pine, black oak, white oak, yellow-poplar
	black oak	65	47	
	white oak	65	47	
	red maple	60	---	
	hickory	60	---	
	yellow-poplar	90	90	
7E:				
Bland	eastern redcedar	50	---	eastern white pine, northern red oak, yellow-poplar
	northern red oak	70	57	
	Virginia pine	70	114	
	yellow-poplar	76	57	
8D:				
Bland	eastern redcedar	50	---	eastern white pine, northern red oak, yellow-poplar
	northern red oak	70	57	
	Virginia pine	70	114	
	yellow-poplar	76	57	
Rock outcrop.				
8E:				
Bland	eastern redcedar	50	---	eastern white pine, northern red oak, yellow-poplar
	northern red oak	70	57	
	Virginia pine	70	114	
	yellow-poplar	76	57	
Rock outcrop.				
9D:				
Bland	eastern redcedar	50	---	eastern white pine, northern red oak, yellow-poplar
	northern red oak	70	57	
	Virginia pine	70	114	
	yellow-poplar	76	57	
Rock outcrop.				

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
10D:				
Calvin	northern red oak	65	47	northern red oak, eastern white pine, black oak, white oak
	black oak	60	43	
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
11F:				
Calvin	northern red oak	65	47	northern red oak, eastern white pine, black oak, white oak
	black oak	60	43	
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
Rough	chestnut oak	40	29	chestnut oak, eastern white pine, white oak, pitch pine, shortleaf pine
	black oak	40	29	
	scarlet oak	40	29	
	white oak	40	29	
	Virginia pine	40	---	
	pitch pine	40	---	
	shortleaf pine	40	---	
12C:				
Carbo	northern red oak	65	47	northern red oak, eastern white pine, black oak, white oak, yellow-poplar
	black oak	60	43	
	white oak	60	43	
	hickory	55	---	
	red maple	55	---	
	yellow-poplar	80	70	
Beech Grove	chestnut oak	50	35	chestnut oak, eastern white pine, white oak
	eastern redcedar	35	40	
	scarlet oak	50	35	
	white oak	50	---	
12D:				
Carbo	northern red oak	65	47	northern red oak, eastern white pine, black oak, white oak, yellow-poplar
	black oak	60	43	
	white oak	60	43	
	hickory	55	---	
	red maple	55	---	
	yellow-poplar	80	70	
Beech Grove	chestnut oak	50	35	chestnut oak, eastern white pine, white oak
	eastern redcedar	35	40	
	scarlet oak	50	35	
	white oak	50	---	
12E:				
Carbo	northern red oak	65	47	northern red oak, eastern white pine, black oak, white oak, yellow-poplar
	black oak	60	43	
	white oak	60	43	
	hickory	55	---	
	red maple	55	---	
	yellow-poplar	80	70	
Beech Grove	chestnut oak	50	35	chestnut oak, eastern white pine, white oak
	eastern redcedar	35	40	
	scarlet oak	50	35	
	white oak	50	---	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
12F:				
Carbo	northern red oak	65	47	northern red oak, eastern white pine, black oak, white oak, yellow-poplar
	black oak	60	43	
	white oak	60	43	
	hickory	55	---	
	red maple	55	---	
	yellow-poplar	80	70	
Beech Grove	chestnut oak	50	35	chestnut oak, eastern white pine, white oak
	eastern redcedar	35	40	
	scarlet oak	50	35	
	white oak	50	---	
13C:				
Carbo	northern red oak	65	47	northern red oak, eastern white pine, black oak, white oak, yellow-poplar
	black oak	60	43	
	white oak	60	43	
	hickory	55	---	
	red maple	55	---	
	yellow-poplar	80	70	
Frederick	northern red oak	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
Urban land.				
14D:				
Carbo	northern red oak	65	47	northern red oak, eastern white pine, black oak, white oak, yellow-poplar
	black oak	60	43	
	white oak	60	43	
	hickory	55	---	
	red maple	55	---	
	yellow-poplar	80	70	
Rock outcrop.				
14E:				
Carbo	northern red oak	65	47	northern red oak, eastern white pine, black oak, white oak, yellow-poplar
	black oak	60	43	
	white oak	60	43	
	hickory	55	---	
	red maple	55	---	
	yellow-poplar	80	70	
Rock outcrop.				
15D:				
Carbo	northern red oak	65	47	northern red oak, eastern white pine, black oak, white oak, yellow-poplar
	black oak	60	43	
	white oak	60	43	
	hickory	55	---	
	red maple	55	---	
	yellow-poplar	80	70	
Rock outcrop.				

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
16C:				
Cedarcreek	American sycamore	90	100	American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar
	black locust	100	---	
	eastern white pine	94	172	
	northern red oak	80	62	
	red maple	75	---	
	yellow-poplar	105	114	
Sewell	American sycamore	90	100	American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar
	black locust	100	---	
	eastern white pine	94	172	
	northern red oak	80	62	
	red maple	75	---	
	yellow-poplar	105	114	
Rock outcrop.				
17A:				
Chagrin	yellow-poplar	100	107	walnut, yellow-poplar
	black walnut	85	65	
	red maple	70	---	
18. Dumps, mine-Urban land				
19C:				
Frederick	northern red oak	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
19D:				
Frederick	northern red oak	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
19E:				
Frederick	northern red oak	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
19F:				
Frederick	northern red oak	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
20C:				
Frederick	northern red oak	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber	
			cu ft/ac	
20D:				
Frederick	northern red oak	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
21C:				
Frederick	northern red oak	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
21D:				
Frederick	northern red oak	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
21E:				
Frederick	northern red oak	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
21F:				
Frederick	northern red oak	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
22C:				
Frederick	northern red oak	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
22D:				
Frederick	northern red oak	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
23D:				
Gilpin	northern red oak	70	52	northern red oak, eastern white pine, white oak, yellow-poplar
	black oak	65	47	
	red maple	80	62	
	white oak	65	47	
	yellow-poplar	85	80	
	hickory	60	---	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
24D:				
Gilpin	black oak	65	47	black oak, hickory
	chestnut oak	65	47	
	hickory	65	41	
	scarlet oak	65	47	
Berks	black oak	60	43	black oak, hickory
	chestnut oak	60	43	
	hickory	60	38	
	scarlet oak	60	43	
24F:				
Gilpin	black oak	65	47	black oak, hickory
	chestnut oak	65	47	
	hickory	65	41	
	scarlet oak	65	47	
Berks	black oak	60	43	black oak, hickory
	chestnut oak	60	43	
	hickory	60	38	
	scarlet oak	60	43	
25E:				
Gilpin	northern red oak	70	52	northern red oak, eastern white pine, white oak, yellow-poplar
	black oak	65	47	
	red maple	80	62	
	white oak	65	47	
	yellow-poplar	85	80	
	hickory	60	---	
Shelocta	northern red oak	80	62	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple	65	41	
	sugar maple	65	---	
	white oak	80	62	
	yellow-poplar	95	98	
26F:				
Gilpin	northern red oak	70	52	northern red oak, eastern white pine, white oak, yellow-poplar
	black oak	65	47	
	red maple	80	62	
	white oak	65	47	
	yellow-poplar	85	80	
	hickory	60	---	
Shelocta	northern red oak	80	62	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple	65	41	
	sugar maple	65	---	
	white oak	80	62	
	yellow-poplar	95	98	
27A:				
Grigsby	black walnut	70	---	black walnut, eastern white pine, northern red oak, shortleaf pine, white ash, white oak, yellow-poplar
	hickory	70	---	
	northern red oak	85	57	
	red maple	70	---	
	sweetgum	60	---	
	white oak	85	57	
	yellow-poplar	110	129	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
28C:				
Highsplint	chestnut oak	80	62	northern red oak, white oak, yellow-poplar
	hickory	80	62	
	northern red oak	85	65	
	red maple	80	62	
	white oak	85	65	
	yellow-poplar	90	90	
28D:				
Highsplint	chestnut oak	80	62	northern red oak, white oak, yellow-poplar
	hickory	80	62	
	northern red oak	85	65	
	red maple	80	62	
	white oak	85	65	
	yellow-poplar	90	90	
29F:				
Highsplint	chestnut oak	80	62	northern red oak, white oak, yellow-poplar
	hickory	80	62	
	northern red oak	85	65	
	red maple	80	62	
	white oak	85	65	
	yellow-poplar	90	90	
Shelocta	chestnut oak	80	62	northern red oak, white oak, yellow-poplar
	hickory	80	62	
	northern red oak	85	65	
	red maple	80	62	
	white oak	85	65	
	yellow-poplar	90	90	
30A:				
Holly	red maple	75	---	swamp white oak, sweetgum
	swamp white oak	70	---	
	sweetgum	100	138	
31D:				
Kaymine	American sycamore	90	100	American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar
	black locust	100	---	
	eastern white pine	94	172	
	northern red oak	80	62	
	red maple	75	---	
	yellow-poplar	105	114	
32E:				
Kaymine	American sycamore	90	100	American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar
	black locust	100	---	
	eastern white pine	94	172	
	northern red oak	80	62	
	red maple	75	---	
	yellow-poplar	105	114	
Cedarcreek	American sycamore	90	100	American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar
	black locust	100	---	
	eastern white pine	94	172	
	northern red oak	80	62	
	red maple	75	---	
	yellow-poplar	105	114	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
33F:				
Kaymine	American sycamore	90	100	American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar
	black locust	100	---	
	eastern white pine	94	172	
	northern red oak	80	62	
	red maple	75	---	
	yellow-poplar	105	114	
Fiveblock	American sycamore	90	---	American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar
	eastern white pine	94	175	
	northern red oak	80	62	
	yellow-poplar	105	114	
34C:				
Kaymine	American sycamore	90	100	American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar
	black locust	100	---	
	eastern white pine	94	172	
	northern red oak	80	62	
	red maple	75	---	
	yellow-poplar	105	114	
Fiveblock	American sycamore	90	---	American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar
	eastern white pine	94	175	
	northern red oak	80	62	
	yellow-poplar	105	114	
Cedarcreek	American sycamore	90	100	American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar
	black locust	100	---	
	eastern white pine	94	172	
	northern red oak	80	62	
	red maple	75	---	
	yellow-poplar	105	114	
35C:				
Lily	northern red oak	65	47	northern red oak, chestnut oak, eastern white pine, white oak, black oak
	chestnut oak	60	43	
	black oak	60	43	
	white oak	60	43	
	hickory	55	---	
	red maple	55	---	
35D:				
Lily	northern red oak	65	47	northern red oak, chestnut oak, eastern white pine, white oak, black oak
	chestnut oak	60	43	
	black oak	60	43	
	white oak	60	43	
	hickory	55	---	
	red maple	55	---	
35E:				
Lily	northern red oak	65	47	northern red oak, chestnut oak, eastern white pine, white oak, black oak
	chestnut oak	60	43	
	black oak	60	43	
	white oak	60	43	
	hickory	55	---	
	red maple	55	---	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
36A:				
Lobdell	yellow-poplar	95	98	red maple, walnut, yellow-poplar
	black walnut	80	62	
	red maple	70	---	
Orrville	black walnut	75	53	red maple, sweetgum, walnut
	red maple	65	---	
37D:				
Mandy	northern red oak	75	57	black cherry, northern red oak, Norway spruce, red maple, red pine, sugar maple
	sugar maple	80	50	
	red maple	80	50	
	black cherry	80	50	
	red spruce	70	165	
	sweet birch	70	---	
	white ash	80	50	
Paddyknob	northern red oak	65	48	black cherry, northern red oak, Norway spruce, red maple, red pine, sugar maple
	red maple	70	43	
	sugar maple	70	43	
	black cherry	70	43	
	white ash	75	50	
	red spruce	65	152	
	chestnut oak	65	---	
Rock outcrop.				
38D:				
Marrowbone	chestnut oak	50	35	hickory
	hickory	50	33	
	scarlet oak	50	35	
	Virginia pine	50	---	
38E:				
Marrowbone	chestnut oak	50	35	hickory
	hickory	50	33	
	scarlet oak	50	35	
	Virginia pine	50	---	
38F:				
Marrowbone	chestnut oak	50	35	hickory
	hickory	50	33	
	scarlet oak	50	35	
	Virginia pine	50	---	
39D:				
Marrowbone	chestnut oak	50	35	hickory
	hickory	50	33	
	scarlet oak	50	35	
	Virginia pine	50	---	
Gilpin	black oak	65	47	black oak, hickory
	chestnut oak	65	47	
	hickory	65	41	
	scarlet oak	65	47	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
39E:				
Marrowbone	chestnut oak	50	35	hickory
	hickory	50	33	
	scarlet oak	50	35	
	Virginia pine	50	---	
Gilpin	black oak	65	47	black oak, hickory
	chestnut oak	65	47	
	hickory	65	41	
	scarlet oak	65	47	
39F:				
Marrowbone	chestnut oak	50	35	hickory
	hickory	50	33	
	scarlet oak	50	35	
	Virginia pine	50	---	
Gilpin	black oak	65	47	black oak, hickory
	chestnut oak	65	47	
	hickory	65	41	
	scarlet oak	65	47	
40F:				
Matewan	chestnut oak	45	30	chestnut oak, scarlet oak
	scarlet oak	45	30	
	Virginia pine	45	55	
Rock outcrop.				
41A:				
Ogles	yellow-poplar	90	90	northern red oak, green ash, red maple, walnut, yellow-poplar
	black walnut	75	53	
	red maple	65	---	
42C:				
Oriskany	northern red oak	75	57	northern red oak, eastern white pine, white ash, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white ash	65	---	
	white oak	75	57	
	yellow-poplar	95	98	
42D:				
Oriskany	northern red oak	75	57	northern red oak, eastern white pine, white ash, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white ash	65	---	
	white oak	75	57	
	yellow-poplar	95	98	
42E:				
Oriskany	northern red oak	75	57	northern red oak, eastern white pine, white ash, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white ash	65	---	
	white oak	75	57	
	yellow-poplar	95	98	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
43. Pits, quarry				
44C:				
Poplimento	northern red oak	80	62	black oak, northern red oak, sugar maple, white ash, yellow-poplar
	black oak	80	62	
	sugar maple	75	48	
	yellow-poplar	90	90	
	white ash	80	62	
Westmoreland	northern red oak	73	57	northern red oak, eastern white pine, black oak, white oak, yellow-poplar
	black oak	65	47	
	white oak	65	47	
	red maple	60	---	
	hickory	60	---	
	yellow-poplar	90	90	
45F:				
Ramsey	chestnut oak	50	35	chestnut oak, eastern white pine, black oak, white oak, shortleaf pine, Table Mountain pine
	scarlet oak	45	30	
	black oak	50	35	
	white oak	50	35	
	Virginia pine	50	---	
	shortleaf pine	50	---	
	Table Mountain pine	50	---	
Rock outcrop.				
46F:				
Rock outcrop.				
Beech Grove	chestnut oak	50	35	---
	eastern redcedar	35	40	
	scarlet oak	50	35	
	white oak	45	---	
Benthole	northern red oak	75	57	northern red oak, eastern white pine, white ash, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white ash	85	65	
	white oak	70	52	
	yellow-poplar	95	98	
47F:				
Sewell	American sycamore	90	100	American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar
	eastern white pine	94	172	
	northern red oak	80	62	
	red maple	75	---	
	yellow-poplar	105	114	
Kaymine	American sycamore	90	100	American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar
	eastern white pine	94	172	
	northern red oak	80	62	
	red maple	75	---	
	yellow-poplar	105	114	
Rock outcrop.				

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
48E:				
Shelocta	chestnut oak	80	62	northern red oak, white oak, yellow-poplar
	hickory	80	62	
	northern red oak	85	65	
	red maple	80	62	
	white oak	85	65	
	yellow-poplar	90	90	
Cedarcreek	American sycamore	90	100	American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar
	black locust	100	---	
	eastern white pine	94	172	
	northern red oak	80	62	
	red maple	75	---	
	yellow-poplar	105	114	
49E:				
Shelocta	chestnut oak	80	62	northern red oak, white oak, yellow-poplar
	hickory	80	62	
	northern red oak	85	65	
	red maple	80	62	
	white oak	85	65	
	yellow-poplar	90	90	
Highsplint	chestnut oak	80	62	northern red oak, white oak, yellow-poplar
	hickory	80	62	
	northern red oak	85	65	
	red maple	80	62	
	white oak	85	65	
	yellow-poplar	90	90	
50F:				
Shelocta	chestnut oak	80	62	northern red oak, white oak, yellow-poplar
	hickory	80	62	
	northern red oak	85	65	
	red maple	80	62	
	white oak	85	65	
	yellow-poplar	90	90	
Kaymine	American sycamore	90	100	American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar
	black locust	100	---	
	eastern white pine	94	172	
	northern red oak	80	62	
	red maple	75	---	
	yellow-poplar	105	114	
51F. Stonecoal				
52C:				
Tumbling	northern red oak	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
52D:				
Tumbling----------------	northern red oak----	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple-----------	65	---	
	sugar maple---------	65	41	
	white oak-----------	70	52	
	yellow-poplar-------	90	90	
53E:				
Tumbling----------------	northern red oak----	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple-----------	65	---	
	sugar maple---------	65	41	
	white oak-----------	70	52	
	yellow-poplar-------	90	90	
54F.				
Udorthents-Urban land				
55D:				
Wallen------------------	black oak-----------	60	43	black oak, chestnut oak, eastern white pine, scarlet oak, white oak
	chestnut oak--------	60	---	
	scarlet oak---------	60	43	
	shortleaf pine------	60	86	
	Virginia pine-------	65	100	
	white oak-----------	60	43	
55F:				
Wallen------------------	black oak-----------	60	43	black oak, chestnut oak, eastern white pine, scarlet oak, white oak
	chestnut oak--------	60	---	
	scarlet oak---------	60	43	
	shortleaf pine------	60	86	
	Virginia pine-------	65	100	
	white oak-----------	60	43	
56D:				
Wallen------------------	black oak-----------	60	43	black oak, chestnut oak, eastern white pine, scarlet oak, white oak
	chestnut oak--------	60	---	
	pitch pine----------	60	---	
	scarlet oak---------	60	43	
	shortleaf pine------	60	86	
	Virginia pine-------	65	100	
	white oak-----------	60	43	
Rock outcrop.				
56F:				
Wallen------------------	black oak-----------	60	43	black oak, chestnut oak, eastern white pine, scarlet oak, white oak
	chestnut oak--------	60	---	
	pitch pine----------	60	---	
	scarlet oak---------	60	43	
	shortleaf pine------	60	86	
	Virginia pine-------	65	100	
	white oak-----------	60	43	
Rock outcrop.				

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
57C:				
Watahala	northern red oak	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	75	57	
	yellow-poplar	85	80	
57D:				
Watahala	northern red oak	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	75	57	
	yellow-poplar	85	80	
57E:				
Watahala	northern red oak	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	75	57	
	yellow-poplar	85	80	
57F:				
Watahala	northern red oak	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	75	57	
	yellow-poplar	85	80	
58D:				
Watahala	northern red oak	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	75	57	
	yellow-poplar	85	80	
58E:				
Watahala	northern red oak	75	57	northern red oak, eastern white pine, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	75	57	
	yellow-poplar	85	80	
59D:				
Wharton	northern red oak	76	57	northern red oak, yellow-poplar
	yellow-poplar	90	86	
Gilpin	black oak	65	47	black oak, hickory
	chestnut oak	65	47	
	hickory	65	41	
	scarlet oak	65	47	
Berks	black oak	60	43	black oak, hickory
	chestnut oak	60	43	
	hickory	60	38	
	scarlet oak	60	43	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
60C:				
Wharton	northern red oak	76	57	northern red oak, yellow-poplar
	yellow-poplar	90	86	
Gilpin	black oak	65	47	black oak, hickory
	chestnut oak	65	47	
	hickory	65	41	
	scarlet oak	65	47	
Marrowbone	chestnut oak	50	35	hickory
	hickory	50	33	
	scarlet oak	50	35	
	Virginia pine	50	---	
61B:				
Wyrick	northern red oak	85	65	northern red oak, black walnut, eastern white pine, white oak, yellow-poplar
	black walnut	85	65	
	red maple	65	---	
	sugar maple	65	41	
	white oak	80	62	
	yellow-poplar	95	98	
Marbie	northern red oak	70	52	northern red oak, black walnut, eastern white pine, white oak, yellow-poplar
	black walnut	80	62	
	red maple	65	---	
	sugar maple	65	41	
	white oak	65	47	
	yellow-poplar	85	80	
61C:				
Wyrick	northern red oak	85	65	northern red oak, black walnut, eastern white pine, white oak, yellow-poplar
	black walnut	85	65	
	red maple	65	---	
	sugar maple	65	41	
	white oak	80	62	
	yellow-poplar	95	98	
Marbie	northern red oak	70	52	northern red oak, black walnut, eastern white pine, white oak, yellow-poplar
	black walnut	80	62	
	red maple	65	---	
	sugar maple	65	41	
	white oak	65	47	
	yellow-poplar	85	80	
W.				
Water				

Table 9.—Forestland Management, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1E:							
Berks	50	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
				Low strength	0.50		
Chiswell	40	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
1F:							
Berks	45	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
				Low strength	0.50		
Chiswell	45	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
2D:							
Berks	45	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Restrictive layer	0.50	Low strength	0.50		
Gilpin	40	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
2E:							
Berks	45	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
				Low strength	0.50		
Gilpin	40	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
2F:							
Berks	45	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
				Low strength	0.50		
Gilpin	40	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
3C:							
Berks	55	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
		Restrictive layer	0.50	Low strength	0.50		
Groseclose	40	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
3D:							
Berks----------------	55	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Restrictive layer	0.50	Low strength	0.50		
Groseclose----------	40	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
4D:							
Berks----------------	50	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Restrictive layer	0.50	Low strength	0.50		
Poplimento----------	40	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
5C:							
Berks----------------	45	Moderate		Moderately suited		Severe	
		Restrictive layer	0.50	Slope	0.50	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
Weikert-------------	45	Severe		Moderately suited		Severe	
		Restrictive layer	1.00	Slope	0.50	Low strength	1.00
5D:							
Berks----------------	45	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Restrictive layer	0.50	Low strength	0.50		
Weikert-------------	45	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50				
5E:							
Berks----------------	65	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
				Low strength	0.50		
Weikert-------------	25	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
5F:							
Berks----------------	60	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
				Low strength	0.50		
Weikert-------------	30	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
6E:							
Berks----------------	55	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
				Low strength	0.50		
Westmoreland--------	35	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
6F:							
Berks	65	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
				Low strength	0.50		
Westmoreland	30	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
7E:							
Bland	85	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
8D:							
Bland	80	Moderate		Poorly suited		Severe	
		Restrictive layer	0.50	Slope	1.00	Low strength	1.00
		Slope	0.50	Low strength	0.50		
Rock outcrop	15	Not rated		Not rated		Not rated	
8E:							
Bland	80	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
Rock outcrop	15	Not rated		Not rated		Not rated	
9D:							
Bland	80	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Restrictive layer	0.50	Low strength	0.50		
Rock outcrop	15	Not rated		Not rated		Not rated	
10D:							
Calvin	85	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Restrictive layer	0.50	Low strength	0.50		
11F:							
Calvin	70	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
				Low strength	0.50		
Rough	20	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
12C:							
Carbo	50	Moderate		Moderately suited		Severe	
		Restrictive layer	0.50	Slope	0.50	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
Beech Grove	30	Severe		Moderately suited		Moderate	
		Restrictive layer	1.00	Slope	0.50	Low strength	0.50

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
12D:							
Carbo	60	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50	Low strength	0.50		
Beech Grove	30	Severe		Poorly suited		Moderate	
		Restrictive layer	1.00	Slope	1.00	Low strength	0.50
		Slope	0.50				
12E:							
Carbo	60	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50	Low strength	0.50		
Beech Grove	30	Severe		Poorly suited		Moderate	
		Restrictive layer	1.00	Slope	1.00	Low strength	0.50
		Slope	0.50				
12F:							
Carbo	60	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
Beech Grove	30	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
13C:							
Carbo	35	Moderate		Moderately suited		Severe	
		Restrictive layer	0.50	Slope	0.50	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
Frederick	34	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
Urban land	30	Not rated		Not rated		Not rated	
14D:							
Carbo	60	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50	Low strength	0.50		
Rock outcrop	15	Not rated		Not rated		Not rated	
14E:							
Carbo	80	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
Rock outcrop	15	Not rated		Not rated		Not rated	
15D:							
Carbo	60	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50	Low strength	0.50		
Rock outcrop	30	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
16C:							
Cedarcreek----------	35	Severe		Moderately suited		Moderate	
		Stoniness	1.00	Slope	0.50	Low strength	0.50
		Landslides	0.10	Landslides	0.10		
Sewell--------------	30	Severe		Moderately suited		Moderate	
		Stoniness	1.00	Slope	0.50	Low strength	0.50
		Landslides	0.10	Landslides	0.10		
Rock outcrop--------	10	Not rated		Not rated		Not rated	
17A:							
Chagrin-------------	90	Severe		Poorly suited		Severe	
		Flooding	1.00	Flooding	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
18:							
Dumps, mine---------	85	Not rated		Not rated		Not rated	
Urban land----------	15	Not rated		Not rated		Not rated	
19C:							
Frederick-----------	95	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
19D:							
Frederick-----------	95	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
19E:							
Frederick-----------	95	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
19F:							
Frederick-----------	95	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
20C:							
Frederick-----------	95	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
20D:							
Frederick-----------	95	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
21C:							
Frederick-----------	95	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
21D:							
Frederick-----------	95	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
21E:							
Frederick-----------	95	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
21F:							
Frederick-----------	95	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
22C:							
Frederick-----------	95	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
22D:							
Frederick-----------	95	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
23D:							
Gilpin--------------	90	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
24D:							
Gilpin--------------	55	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Restrictive layer	0.50	Low strength	0.50		
		Landslides	0.50	Landslides	0.50		
Berks---------------	30	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Restrictive layer	0.50	Low strength	0.50		
		Landslides	0.10	Landslides	0.10		
24F:							
Gilpin--------------	55	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Landslides	0.50	Low strength	0.50		
		Low strength	0.50	Landslides	0.50		
Berks---------------	35	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Landslides	0.10	Low strength	0.50		
				Landslides	0.10		
25E:							
Gilpin--------------	65	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
Shelocta-----------	30	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
26F:							
Gilpin----------------	60	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
Shelocta--------------	35	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
27A:							
Grigsby---------------	95	Severe		Poorly suited		Moderate	
		Flooding	1.00	Flooding	1.00	Low strength	0.50
28C:							
Highsplint------------	90	Severe		Poorly suited		Severe	
		Landslides	1.00	Landslides	1.00	Low strength	1.00
				Slope	0.50		
				Low strength	0.50		
28D:							
Highsplint------------	90	Severe		Poorly suited		Severe	
		Landslides	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50	Landslides	1.00		
				Low strength	0.50		
29F:							
Highsplint------------	55	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Landslides	1.00	Landslides	1.00		
				Low strength	0.50		
Shelocta--------------	40	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Landslides	1.00	Landslides	1.00		
30A:							
Holly-----------------	97	Severe		Poorly suited		Severe	
		Flooding	1.00	Ponding	1.00	Low strength	1.00
		Wetness	1.00	Flooding	1.00		
		Low strength	0.50	Wetness	0.50		
31D:							
Kaymine---------------	90	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
		Landslides	0.10	Landslides	0.10		
32E:							
Kaymine---------------	85	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
		Landslides	0.10	Landslides	0.10		
Cedarcreek------------	15	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
		Landslides	0.10	Landslides	0.10		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
33F:							
Kaymine	50	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
		Landslides	0.10	Landslides	0.10		
Fiveblock	45	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
		Landslides	0.10	Sandiness	0.50		
34C:							
Kaymine	55	Severe		Moderately suited		Moderate	
		Stoniness	1.00	Slope	0.50	Low strength	0.50
		Landslides	0.10	Rock fragments	0.50		
				Landslides	0.10		
Fiveblock	25	Severe		Moderately suited		Moderate	
		Stoniness	1.00	Slope	0.50	Low strength	0.50
		Sandiness	0.50	Rock fragments	0.50		
		Landslides	0.10	Sandiness	0.50		
Cedarcreek	20	Severe		Moderately suited		Moderate	
		Stoniness	1.00	Slope	0.50	Low strength	0.50
		Landslides	0.10	Rock fragments	0.50		
				Landslides	0.10		
35C:							
Lily	90	Moderate		Moderately suited		Severe	
		Restrictive layer	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
35D:							
Lily	90	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50	Low strength	0.50		
35E:							
Lily	90	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
36A:							
Lobdell	65	Severe		Poorly suited		Severe	
		Flooding	1.00	Flooding	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
Orrville	30	Severe		Poorly suited		Severe	
		Flooding	1.00	Flooding	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
		Wetness	0.50				
37D:							
Mandy	45	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
37D:							
Paddyknob	40	Severe Restrictive layer Slope	 1.00 0.50	Poorly suited Slope	 1.00	Moderate Low strength	 0.50
Rock outcrop	10	Not rated		Not rated		Not rated	
38D:							
Marrowbone	85	Moderate Slope Restrictive layer Landslides	 0.50 0.50 0.50	Poorly suited Slope Landslides	 1.00 0.50	Moderate Low strength	 0.50
38E:							
Marrowbone	85	Severe Slope Landslides	 1.00 0.50	Poorly suited Slope Landslides	 1.00 0.50	Moderate Low strength	 0.50
38F:							
Marrowbone	85	Severe Slope Landslides	 1.00 0.50	Poorly suited Slope Landslides	 1.00 0.50	Moderate Low strength	 0.50
39D:							
Marrowbone	50	Moderate Restrictive layer Slope Landslides	 0.50 0.50 0.50	Poorly suited Slope Landslides	 1.00 0.50	Moderate Low strength	 0.50
Gilpin	45	Moderate Restrictive layer Slope Landslides	 0.50 0.50 0.50	Poorly suited Slope Low strength Landslides	 1.00 0.50 0.50	Severe Low strength	 1.00
39E:							
Marrowbone	60	Moderate Slope Restrictive layer Landslides	 0.50 0.50 0.50	Poorly suited Slope Landslides	 1.00 0.50	Moderate Low strength	 0.50
Gilpin	35	Moderate Slope Restrictive layer Landslides	 0.50 0.50 0.50	Poorly suited Slope Low strength Landslides	 1.00 0.50 0.50	Severe Low strength	 1.00
39F:							
Marrowbone	75	Severe Slope Landslides	 1.00 0.50	Poorly suited Slope Landslides	 1.00 0.50	Moderate Low strength	 0.50
Gilpin	15	Severe Slope Landslides Low strength	 1.00 0.50 0.50	Poorly suited Slope Low strength Landslides	 1.00 0.50 0.50	Severe Low strength	 1.00

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
40F:							
Matewan-------------	45	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Landslides	1.00	Landslides	1.00		
		Stoniness	0.50	Rock fragments	0.50		
Rock outcrop--------	40	Not rated		Not rated		Not rated	
41A:							
Ogles---------------	90	Severe		Poorly suited		Moderate	
		Flooding	1.00	Flooding	1.00	Low strength	0.50
		Stoniness	1.00	Low strength	0.50		
		Low strength	0.50				
42C:							
Oriskany------------	75	Severe		Moderately suited		Slight	
		Stoniness	1.00	Slope	0.50	Strength	0.10
				Rock fragments	0.50		
42D:							
Oriskany------------	75	Moderate		Poorly suited		Slight	
		Slope	0.50	Slope	1.00	Strength	0.10
		Stoniness	0.50	Rock fragments	0.50		
42E:							
Oriskany------------	75	Severe		Poorly suited		Slight	
		Slope	1.00	Slope	1.00	Strength	0.10
		Stoniness	0.50	Rock fragments	0.50		
43:							
Pits, quarry--------	95	Not rated		Not rated		Not rated	
44C:							
Poplimento----------	45	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
Westmoreland--------	40	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
45F:							
Ramsey--------------	75	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
Rock outcrop--------	15	Not rated		Not rated		Not rated	
46F:							
Rock outcrop--------	45	Not rated		Not rated		Not rated	
Beech Grove---------	25	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
Benthole------------	25	Severe		Poorly suited		Severe	
		Slope	1.00	Rock fragments	1.00	Low strength	1.00
		Stoniness	0.50	Slope	1.00		
		Low strength	0.50	Low strength	0.50		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
47F:							
Sewell	55	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
		Landslides	0.10	Landslides	0.10		
Kaymine	30	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
		Landslides	0.10	Landslides	0.10		
Rock outcrop	10	Not rated		Not rated		Not rated	
48E:							
Shelocta	70	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Landslides	1.00	Landslides	1.00		
				Rock fragments	0.50		
Cedarcreek	25	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Landslides	0.10	Rock fragments	0.50		
				Landslides	0.10		
49E:							
Shelocta	50	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Landslides	1.00	Landslides	1.00		
Highsplint	40	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Landslides	1.00	Landslides	1.00		
				Low strength	0.50		
50F:							
Shelocta	55	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Landslides	1.00	Landslides	1.00		
				Rock fragments	0.50		
Kaymine	40	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Landslides	0.10	Rock fragments	0.50		
				Landslides	0.10		
51F:							
Stonecoal	85	Severe		Poorly suited		Slight	
		Slope	1.00	Slope	1.00	Strength	0.10
				Sandiness	0.50		
52C:							
Tumbling	85	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
52D:							
Tumbling	80	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
53E:							
Tumbling------------	85	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
54F:							
Udorthents----------	45	Not rated		Not rated		Not rated	
Urban land----------	30	Not rated		Not rated		Not rated	
55D:							
Wallen--------------	90	Severe		Poorly suited		Moderate	
		Restrictive layer	1.00	Slope	1.00	Low strength	0.50
		Slope	0.50				
55F:							
Wallen--------------	90	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
56D:							
Wallen--------------	65	Severe		Poorly suited		Moderate	
		Restrictive layer	1.00	Slope	1.00	Low strength	0.50
		Slope	0.50	Rock fragments	0.50		
		Stoniness	0.50				
Rock outcrop--------	25	Not rated		Not rated		Not rated	
56F:							
Wallen--------------	65	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
Rock outcrop--------	25	Not rated		Not rated		Not rated	
57C:							
Watahala------------	95	Slight		Moderately suited		Moderate	
				Slope	0.50	Low strength	0.50
57D:							
Watahala------------	95	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Low strength	0.50
57E:							
Watahala------------	95	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Low strength	0.50
57F:							
Watahala------------	90	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
58D:							
Watahala------------	95	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
58E:							
Watahala------------	95	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
59D:							
Wharton-------------	45	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Landslides	0.50	Low strength	0.50		
				Landslides	0.50		
Gilpin--------------	40	Moderate		Poorly suited		Severe	
		Restrictive layer	0.50	Slope	1.00	Low strength	1.00
		Slope	0.50	Low strength	0.50		
		Landslides	0.50	Landslides	0.50		
Berks---------------	15	Moderate		Poorly suited		Severe	
		Restrictive layer	0.50	Slope	1.00	Low strength	1.00
		Slope	0.50	Low strength	0.50		
		Landslides	0.10	Landslides	0.10		
60C:							
Wharton-------------	45	Moderate		Moderately suited		Severe	
		Landslides	0.50	Slope	0.50	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
				Landslides	0.50		
Gilpin--------------	35	Moderate		Moderately suited		Severe	
		Restrictive layer	0.50	Slope	0.50	Low strength	1.00
		Landslides	0.50	Low strength	0.50		
		Low strength	0.50	Landslides	0.50		
Marrowbone----------	20	Moderate		Moderately suited		Moderate	
		Landslides	0.50	Slope	0.50	Low strength	0.50
				Landslides	0.50		
61B:							
Wyrick--------------	55	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
				Slope	0.50		
Marbie--------------	40	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
				Slope	0.50		
61C:							
Wyrick--------------	55	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
Marbie--------------	40	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
W:							
Water---------------	100	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
1E:							
Berks	50	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Chiswell	40	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
1F:							
Berks	45	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Chiswell	45	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
2D:							
Berks	45	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Gilpin	40	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
2E:							
Berks	45	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Gilpin	40	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
2F:							
Berks	45	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Gilpin	40	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
3C:							
Berks	55	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
Groseclose	40	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
3D:							
Berks	55	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Groseclose	40	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
4D:							
Berks	50	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Poplimento	40	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
5C:							
Berks	45	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
Weikert	45	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
5D:							
Berks	45	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Weikert	45	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
5E:							
Berks	65	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Weikert	25	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
5F:							
Berks	60	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Weikert	30	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
6E:							
Berks	55	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Westmoreland	35	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
6F:							
Berks	65	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Westmoreland	30	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
7E:							
Bland	85	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
8D:							
Bland	80	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Rock outcrop	15	Not rated		Not rated		Not rated	
8E:							
Bland	80	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Rock outcrop	15	Not rated		Not rated		Not rated	
9D:							
Bland	80	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Rock outcrop	15	Not rated		Not rated		Not rated	
10D:							
Calvin	85	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
11F:							
Calvin	70	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Rough	20	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
12C:							
Carbo	50	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
Beech Grove	30	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
12D:							
Carbo	60	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
12D:							
Beech Grove----------	30	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
12E:							
Carbo----------------	60	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Beech Grove----------	30	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
12F:							
Carbo----------------	60	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Beech Grove----------	30	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
13C:							
Carbo----------------	35	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
						Low strength	0.50
Frederick------------	34	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
						Low strength	0.50
Urban land-----------	30	Not rated		Not rated		Not rated	
14D:							
Carbo----------------	60	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Rock outcrop---------	15	Not rated		Not rated		Not rated	
14E:							
Carbo----------------	80	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Rock outcrop---------	15	Not rated		Not rated		Not rated	
15D:							
Carbo----------------	60	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Rock outcrop---------	30	Not rated		Not rated		Not rated	
16C:							
Cedarcreek-----------	35	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
						Landslides	0.10
Sewell---------------	30	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
						Landslides	0.10

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
16C:							
Rock outcrop	10	Not rated		Not rated		Not rated	
17A:							
Chagrin	90	Slight		Slight		Poorly suited	
						Flooding	1.00
						Low strength	0.50
18:							
Dumps, mine	85	Not rated		Not rated		Not rated	
Urban land	15	Not rated		Not rated		Not rated	
19C:							
Frederick	95	Moderate		Severe		Moderately suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
19D:							
Frederick	95	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
19E:							
Frederick	95	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
19F:							
Frederick	95	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
20C:							
Frederick	95	Moderate		Severe		Moderately suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
20D:							
Frederick	95	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
21C:							
Frederick	95	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
						Low strength	0.50
21D:							
Frederick	95	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
21E:							
Frederick	95	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
21F:							
Frederick-----------	95	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
22C:							
Frederick-----------	95	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
						Low strength	0.50
22D:							
Frederick-----------	95	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
23D:							
Gilpin--------------	90	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
24D:							
Gilpin--------------	55	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
						Landslides	0.50
Berks---------------	30	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
						Landslides	0.10
24F:							
Gilpin--------------	55	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
						Landslides	0.50
Berks---------------	35	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
						Landslides	0.10
25E:							
Gilpin--------------	65	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Shelocta------------	30	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
26F:							
Gilpin--------------	60	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Shelocta------------	35	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
27A:							
Grigsby	95	Slight		Slight		Poorly suited	
						Flooding	1.00
28C:							
Highsplint	90	Slight		Severe		Poorly suited	
				Slope/erodibility	0.95	Landslides	1.00
						Slope	0.50
						Low strength	0.50
28D:							
Highsplint	90	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Landslides	1.00
						Low strength	0.50
29F:							
Highsplint	55	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Landslides	1.00
						Low strength	0.50
Shelocta	40	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Landslides	1.00
30A:							
Holly	97	Slight		Slight		Poorly suited	
						Ponding	1.00
						Flooding	1.00
						Wetness	0.50
31D:							
Kaymine	90	Moderate		Moderate		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.50	Slope	1.00
						Rock fragments	0.50
						Landslides	0.10
32E:							
Kaymine	85	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
						Landslides	0.10
Cedarcreek	15	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
						Landslides	0.10
33F:							
Kaymine	50	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
						Landslides	0.10
Fiveblock	45	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
						Sandiness	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
34C:							
Kaymine	55	Slight		Slight		Moderately suited	
						Slope	0.50
						Rock fragments	0.50
						Landslides	0.10
Fiveblock	25	Slight		Slight		Moderately suited	
						Slope	0.50
						Rock fragments	0.50
						Sandiness	0.50
Cedarcreek	20	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
						Rock fragments	0.50
						Landslides	0.10
35C:							
Lily	90	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
						Low strength	0.50
35D:							
Lily	90	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
35E:							
Lily	90	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
36A:							
Lobdell	65	Slight		Slight		Poorly suited	
						Flooding	1.00
						Low strength	0.50
Orrville	30	Slight		Slight		Poorly suited	
						Flooding	1.00
						Low strength	0.50
37D:							
Mandy	45	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Paddyknob	40	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
Rock outcrop	10	Not rated		Not rated		Not rated	
38D:							
Marrowbone	85	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Landslides	0.50
38E:							
Marrowbone	85	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Landslides	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
38F:							
Marrowbone----------	85	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Landslides	0.50
39D:							
Marrowbone----------	50	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Landslides	0.50
Gilpin--------------	45	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
						Landslides	0.50
39E:							
Marrowbone----------	60	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Landslides	0.50
Gilpin--------------	35	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
						Landslides	0.50
39F:							
Marrowbone----------	75	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Landslides	0.50
Gilpin--------------	15	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
						Landslides	0.50
40F:							
Matewan-------------	45	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Landslides	1.00
						Rock fragments	0.50
Rock outcrop--------	40	Not rated		Not rated		Not rated	
41A:							
Ogles---------------	90	Slight		Slight		Poorly suited	
						Flooding	1.00
						Low strength	0.50
42C:							
Oriskany------------	75	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
						Rock fragments	0.50
42D:							
Oriskany------------	75	Moderate		Moderate		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.50	Slope	1.00
						Rock fragments	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
42E:							
Oriskany------------	75	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
43:							
Pits, quarry--------	95	Not rated		Not rated		Not rated	
44C:							
Poplimento----------	45	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
Westmoreland--------	40	Moderate		Severe		Moderately suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
45F:							
Ramsey--------------	75	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
Rock outcrop--------	15	Not rated		Not rated		Not rated	
46F:							
Rock outcrop--------	45	Not rated		Not rated		Not rated	
Beech Grove---------	25	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
Benthole------------	25	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Rock fragments	1.00
						Slope	1.00
						Low strength	0.50
47F:							
Sewell--------------	55	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
						Landslides	0.10
Kaymine-------------	30	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
						Landslides	0.10
Rock outcrop--------	10	Not rated		Not rated		Not rated	
48E:							
Shelocta------------	70	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Landslides	1.00
						Rock fragments	0.50
Cedarcreek----------	25	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
						Landslides	0.10

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
49E:							
Shelocta------------	50	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Landslides	1.00
Highsplint----------	40	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Landslides	1.00
						Low strength	0.50
50F:							
Shelocta------------	55	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Landslides	1.00
						Rock fragments	0.50
Kaymine-------------	40	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
						Landslides	0.10
51F:							
Stonecoal-----------	85	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Sandiness	0.50
52C:							
Tumbling------------	85	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
						Low strength	0.50
52D:							
Tumbling------------	80	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
53E:							
Tumbling------------	85	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
54F:							
Udorthents----------	45	Not rated		Not rated		Not rated	
Urban land----------	30	Not rated		Not rated		Not rated	
55D:							
Wallen--------------	90	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
55F:							
Wallen--------------	90	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
56D:							
Wallen--------------	65	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
Rock outcrop--------	25	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
56F:							
Wallen	65	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
Rock outcrop	25	Not rated		Not rated		Not rated	
57C:							
Watahala	95	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
57D:							
Watahala	95	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
57E:							
Watahala	95	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
57F:							
Watahala	90	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
58D:							
Watahala	95	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
58E:							
Watahala	95	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
59D:							
Wharton	45	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
						Landslides	0.50
Gilpin	40	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
						Landslides	0.50
Berks	15	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
						Landslides	0.10
60C:							
Wharton	45	Moderate		Severe		Moderately suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
						Landslides	0.50
Gilpin	35	Moderate		Severe		Moderately suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
						Landslides	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
60C:							
Marrowbone----------	20	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Landslides	0.50
61B:							
Wyrick--------------	55	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
						Slope	0.50
Marbie--------------	40	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
						Slope	0.50
61C:							
Wyrick--------------	55	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
Marbie--------------	40	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
W:							
Water---------------	100	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part III

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
1E:							
Berks	50	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Low strength	0.50
Chiswell	40	Moderately suited		Unsuited		Poorly suited	
		Rock fragments	0.50	Slope	1.00	Slope	1.00
		Slope	0.50	Rock fragments	0.75		
		Restrictive layer	0.50				
1F:							
Berks	45	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Low strength	0.50
Chiswell	45	Moderately suited		Unsuited		Poorly suited	
		Rock fragments	0.50	Slope	1.00	Slope	1.00
		Slope	0.50	Rock fragments	0.75		
		Restrictive layer	0.50				
2D:							
Berks	45	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Low strength	0.50
				Rock fragments	0.75	Slope	0.50
Gilpin	40	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
						Slope	0.50
2E:							
Berks	45	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Low strength	0.50
Gilpin	40	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
						Low strength	0.50
2F:							
Berks	45	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Low strength	0.50
Gilpin	40	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Low strength	0.50
3C:							
Berks	55	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Rock fragments	0.75	Low strength	0.50
				Slope	0.50		

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
3C:							
Groseclose----------	40	Moderately suited Stickiness; high plasticity index	 0.50	Moderately suited Slope Stickiness; high plasticity index	 0.50 0.50	Moderately suited Low strength	 0.50
3D:							
Berks---------------	55	Moderately suited Rock fragments	 0.50	Poorly suited Slope Rock fragments	 0.75 0.75	Moderately suited Low strength Slope	 0.50 0.50
Groseclose----------	40	Moderately suited Stickiness; high plasticity index	 0.50	Poorly suited Slope Stickiness; high plasticity index	 0.75 0.50	Moderately suited Low strength Slope	 0.50 0.50
4D:							
Berks---------------	50	Moderately suited Rock fragments	 0.50	Poorly suited Slope Rock fragments	 0.75 0.75	Moderately suited Low strength Slope	 0.50 0.50
Poplimento----------	40	Moderately suited Stickiness; high plasticity index	 0.50	Poorly suited Slope Stickiness; high plasticity index	 0.75 0.50	Moderately suited Low strength Slope	 0.50 0.50
5C:							
Berks---------------	45	Moderately suited Rock fragments	 0.50	Poorly suited Rock fragments Slope	 0.75 0.50	Moderately suited Low strength	 0.50
Weikert-------------	45	Poorly suited Rock fragments	 0.75	Unsuited Rock fragments Slope	 1.00 0.50	Well suited	
5D:							
Berks---------------	45	Moderately suited Rock fragments	 0.50	Poorly suited Slope Rock fragments	 0.75 0.75	Moderately suited Low strength Slope	 0.50 0.50
Weikert-------------	45	Poorly suited Rock fragments	 0.75	Unsuited Rock fragments Slope	 1.00 0.75	Moderately suited Slope	 0.50
5E:							
Berks---------------	65	Moderately suited Slope Rock fragments	 0.50 0.50	Unsuited Slope Rock fragments	 1.00 0.75	Poorly suited Slope Low strength	 1.00 0.50
Weikert-------------	25	Poorly suited Rock fragments Slope	 0.75 0.50	Unsuited Slope Rock fragments	 1.00 1.00	Poorly suited Slope	 1.00
5F:							
Berks---------------	60	Moderately suited Slope Rock fragments	 0.50 0.50	Unsuited Slope Rock fragments	 1.00 0.75	Poorly suited Slope Low strength	 1.00 0.50
Weikert-------------	30	Poorly suited Rock fragments Slope	 0.75 0.50	Unsuited Slope Rock fragments	 1.00 1.00	Poorly suited Slope	 1.00

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
6E:							
Berks	55	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Low strength	0.50
Westmoreland	35	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
						Low strength	0.50
6F:							
Berks	65	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Low strength	0.50
Westmoreland	30	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
						Low strength	0.50
7E:							
Bland	85	Poorly suited		Unsuited		Poorly suited	
		Stickiness; high plasticity index	0.75	Slope	1.00	Slope	1.00
		Slope	0.50	Stickiness; high plasticity index	0.75	Low strength	0.50
8D:							
Bland	80	Poorly suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
				Slope	0.75		
Rock outcrop	15	Not rated		Not rated		Not rated	
8E:							
Bland	80	Poorly suited		Unsuited		Poorly suited	
		Stickiness; high plasticity index	0.75	Slope	1.00	Slope	1.00
		Slope	0.50	Stickiness; high plasticity index	0.75	Low strength	0.50
Rock outcrop	15	Not rated		Not rated		Not rated	
9D:							
Bland	80	Poorly suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.75	Slope	0.75	Low strength	0.50
				Stickiness; high plasticity index	0.75	Slope	0.50
Rock outcrop	15	Not rated		Not rated		Not rated	
10D:							
Calvin	85	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Low strength	0.50
				Rock fragments	0.75	Slope	0.50
11F:							
Calvin	70	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Low strength	0.50

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
11F:							
Rough	20	Unsuited		Unsuited		Poorly suited	
		Restrictive layer	1.00	Restrictive layer	1.00	Slope	1.00
		Rock fragments	0.50	Slope	1.00		
		Slope	0.50	Rock fragments	1.00		
12C:							
Carbo	50	Poorly suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
				Slope	0.50		
Beech Grove	30	Unsuited		Unsuited		Well suited	
		Restrictive layer	1.00	Restrictive layer	1.00		
				Slope	0.50		
				Rock fragments	0.50		
12D:							
Carbo	60	Poorly suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
						Slope	0.50
				Slope	0.75		
Beech Grove	30	Unsuited		Unsuited		Moderately suited	
		Restrictive layer	1.00	Restrictive layer	1.00	Slope	0.50
				Slope	0.75		
				Rock fragments	0.50		
12E:							
Carbo	60	Poorly suited		Unsuited		Moderately suited	
		Stickiness; high plasticity index	0.75	Slope	1.00	Low strength	0.50
				Stickiness; high plasticity index	0.75	Slope	0.50
Beech Grove	30	Unsuited		Unsuited		Moderately suited	
		Restrictive layer	1.00	Restrictive layer	1.00	Slope	0.50
				Slope	1.00		
				Rock fragments	0.50		
12F:							
Carbo	60	Poorly suited		Unsuited		Poorly suited	
		Stickiness; high plasticity index	0.75	Slope	1.00	Slope	1.00
				Stickiness; high plasticity index	0.75	Low strength	0.50
		Slope	0.50				
Beech Grove	30	Unsuited		Unsuited		Poorly suited	
		Restrictive layer	1.00	Restrictive layer	1.00	Slope	1.00
		Slope	0.50	Slope	1.00		
				Rock fragments	0.50		
13C:							
Carbo	35	Poorly suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
				Slope	0.50		

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
13C:							
Frederick	34	Moderately suited		Moderately suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.50	Low strength	0.50
				Stickiness; high plasticity index	0.50		
Urban land	30	Not rated		Not rated		Not rated	
14D:							
Carbo	60	Poorly suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
				Slope	0.75	Slope	0.50
Rock outcrop	15	Not rated		Not rated		Not rated	
14E:							
Carbo	80	Poorly suited		Unsuited		Poorly suited	
		Stickiness; high plasticity index	0.75	Slope	1.00	Slope	1.00
		Slope	0.50	Stickiness; high plasticity index	0.75	Low strength	0.50
Rock outcrop	15	Not rated		Not rated		Not rated	
15D:							
Carbo	60	Poorly suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.75	Slope	0.75	Low strength	0.50
				Stickiness; high plasticity index	0.75	Slope	0.50
Rock outcrop	30	Not rated		Not rated		Not rated	
16C:							
Cedarcreek	35	Well suited		Moderately suited		Well suited	
				Rock fragments	0.50		
				Slope	0.50		
Sewell	30	Moderately suited		Poorly suited		Well suited	
		Rock fragments	0.50	Rock fragments	0.75		
				Slope	0.50		
Rock outcrop	10	Not rated		Not rated		Not rated	
17A:							
Chagrin	90	Well suited		Well suited		Moderately suited	
						Low strength	0.50
18:							
Dumps, mine	85	Not rated		Not rated		Not rated	
Urban land	15	Not rated		Not rated		Not rated	
19C:							
Frederick	95	Moderately suited		Moderately suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.50	Low strength	0.50
				Stickiness; high plasticity index	0.50		

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
19D:							
Frederick-----------	95	Moderately suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.75	Low strength	0.50
				Stickiness; high plasticity index	0.50	Slope	0.50
19E:							
Frederick-----------	95	Moderately suited		Unsuited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	1.00	Low strength	0.50
				Stickiness; high plasticity index	0.50	Slope	0.50
19F:							
Frederick-----------	95	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
20C:							
Frederick-----------	95	Moderately suited		Moderately suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.50	Low strength	0.50
				Stickiness; high plasticity index	0.50		
20D:							
Frederick-----------	95	Moderately suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.75	Low strength	0.50
				Stickiness; high plasticity index	0.50	Slope	0.50
21C:							
Frederick-----------	95	Moderately suited		Moderately suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.50	Low strength	0.50
				Rock fragments	0.50		
				Stickiness; high plasticity index	0.50		
21D:							
Frederick-----------	95	Moderately suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
				Stickiness; high plasticity index	0.50		
21E:							
Frederick-----------	95	Moderately suited		Unsuited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	1.00	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
				Stickiness; high plasticity index	0.50		
21F:							
Frederick-----------	95	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Stickiness; high plasticity index	0.50	Rock fragments	0.50	Low strength	0.50
				Stickiness; high plasticity index	0.50		

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
22C:							
Frederick	95	Moderately suited		Moderately suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.50	Low strength	0.50
				Rock fragments	0.50		
				Stickiness; high plasticity index	0.50		
22D:							
Frederick	95	Moderately suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
				Stickiness; high plasticity index	0.50		
23D:							
Gilpin	90	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
						Slope	0.50
24D:							
Gilpin	55	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
Berks	30	Moderately suited		Unsuited		Moderately suited	
		Rock fragments	0.50	Slope	1.00	Low strength	0.50
				Rock fragments	0.75	Slope	0.50
24F:							
Gilpin	55	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Low strength	0.50
Berks	35	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Low strength	0.50
25E:							
Gilpin	65	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Low strength	0.50
Shelocta	30	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Low strength	0.50
26F:							
Gilpin	60	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Low strength	0.50
Shelocta	35	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Low strength	0.50
27A:							
Grigsby	95	Well suited		Well suited		Well suited	

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
28C:							
Highsplint	90	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Low strength	0.50
				Slope	0.50		
28D:							
Highsplint	90	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
29F:							
Highsplint	55	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Low strength	0.50
Shelocta	40	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50		
30A:							
Holly	97	Poorly suited		Poorly suited		Poorly suited	
		Wetness	0.75	Wetness	0.75	Wetness	1.00
						Low strength	0.50
31D:							
Kaymine	90	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Rock fragments	0.50
				Rock fragments	0.75	Slope	0.50
32E:							
Kaymine	85	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
Cedarcreek	15	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
33F:							
Kaymine	50	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
Fiveblock	45	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Sandiness	0.50	Rock fragments	0.75	Rock fragments	0.50
		Rock fragments	0.50	Sandiness	0.50	Sandiness	0.50
34C:							
Kaymine	55	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
				Slope	0.50		
Fiveblock	25	Moderately suited		Poorly suited		Moderately suited	
		Sandiness	0.50	Rock fragments	0.75	Rock fragments	0.50
		Rock fragments	0.50	Sandiness	0.50	Sandiness	0.50
				Slope	0.50		
Cedarcreek	20	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
				Slope	0.50		

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
35C:							
Lily----------------	90	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
				Rock fragments	0.50		
35D:							
Lily----------------	90	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
35E:							
Lily----------------	90	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Low strength	0.50
36A:							
Lobdell-------------	65	Well suited		Well suited		Moderately suited	
						Low strength	0.50
Orrville------------	30	Well suited		Well suited		Moderately suited	
						Low strength	0.50
						Wetness	0.50
37D:							
Mandy---------------	45	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Low strength	0.50
				Rock fragments	0.75	Slope	0.50
Paddyknob-----------	40	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Slope	0.50
				Rock fragments	0.75		
Rock outcrop--------	10	Not rated		Not rated		Not rated	
38D:							
Marrowbone----------	85	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Slope	0.50
				Rock fragments	0.50		
38E:							
Marrowbone----------	85	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50		
38F:							
Marrowbone----------	85	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50		
39D:							
Marrowbone----------	50	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Slope	0.50
				Rock fragments	0.50		
Gilpin--------------	45	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
39E:							
Marrowbone----------	60	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Slope	0.50
				Rock fragments	0.50		
Gilpin--------------	35	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
39F:							
Marrowbone----------	75	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50		
Gilpin--------------	15	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Low strength	0.50
40F:							
Matewan-------------	45	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
Rock outcrop--------	40	Not rated		Not rated		Not rated	
41A:							
Ogles---------------	90	Moderately suited		Unsuited		Moderately suited	
		Rock fragments	0.50	Rock fragments	1.00	Low strength	0.50
42C:							
Oriskany------------	75	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
				Slope	0.50		
42D:							
Oriskany------------	75	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Rock fragments	0.50
				Rock fragments	0.75	Slope	0.50
42E:							
Oriskany------------	75	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
43:							
Pits, quarry--------	95	Not rated		Not rated		Not rated	
44C:							
Poplimento----------	45	Moderately suited		Moderately suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.50	Low strength	0.50
				Stickiness; high plasticity index	0.50		
Westmoreland--------	40	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
45F:							
Ramsey--------------	75	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
Rock outcrop--------	15	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
46F:							
Rock outcrop	45	Not rated		Not rated		Not rated	
Beech Grove	25	Unsuited		Unsuited		Poorly suited	
		Restrictive layer	1.00	Restrictive layer	1.00	Slope	1.00
		Slope	0.75	Slope	1.00		
				Rock fragments	0.50		
Benthole	25	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Rock fragments	1.00
		Rock fragments	0.50	Rock fragments	1.00	Slope	1.00
						Low strength	0.50
47F:							
Sewell	55	Moderately suited		Unsuited		Poorly suited	
		Rock fragments	0.50	Slope	1.00	Slope	1.00
		Slope	0.50	Rock fragments	0.75	Rock fragments	0.50
Kaymine	30	Moderately suited		Unsuited		Poorly suited	
		Rock fragments	0.50	Slope	1.00	Slope	1.00
		Slope	0.50	Rock fragments	0.75	Rock fragments	0.50
Rock outcrop	10	Not rated		Not rated		Not rated	
48E:							
Shelocta	70	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Rock fragments	0.50
Cedarcreek	25	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Rock fragments	0.50
49E:							
Shelocta	50	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50		
Highsplint	40	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Low strength	0.50
50F:							
Shelocta	55	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Rock fragments	0.50
Kaymine	40	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
51F:							
Stonecoal	85	Moderately suited		Unsuited		Poorly suited	
		Sandiness	0.50	Slope	1.00	Slope	1.00
		Slope	0.50	Sandiness	0.50	Sandiness	0.50
		Rock fragments	0.50	Rock fragments	0.50		
52C:							
Tumbling	85	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
52D:							
Tumbling-----------	80	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
						Slope	0.50
53E:							
Tumbling-----------	85	Moderately suited		Unsuited		Moderately suited	
		Slope	0.50	Slope	1.00	Slope	0.50
				Rock fragments	0.50	Low strength	0.50
54F:							
Udorthents----------	45	Not rated		Not rated		Not rated	
Urban land----------	30	Not rated		Not rated		Not rated	
55D:							
Wallen--------------	90	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Slope	0.50
				Rock fragments	0.50		
55F:							
Wallen--------------	90	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50		
56D:							
Wallen--------------	65	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Rock fragments	0.50
				Rock fragments	0.75	Slope	0.50
Rock outcrop--------	25	Not rated		Not rated		Not rated	
56F:							
Wallen--------------	65	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Rock fragments	0.50
Rock outcrop--------	25	Not rated		Not rated		Not rated	
57C:							
Watahala------------	95	Moderately suited		Poorly suited		Well suited	
		Rock fragments	0.50	Rock fragments	0.75		
				Slope	0.50		
57D:							
Watahala------------	95	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Slope	0.50
				Rock fragments	0.75		
57E:							
Watahala------------	95	Moderately suited		Unsuited		Moderately suited	
		Rock fragments	0.50	Slope	1.00	Slope	0.50
				Rock fragments	0.75		
57F:							
Watahala------------	90	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75		

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
58D:							
Watahala------------	95	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Rock fragments	0.50
				Rock fragments	0.75	Slope	0.50
58E:							
Watahala------------	95	Moderately suited		Unsuited		Moderately suited	
		Rock fragments	0.50	Slope	1.00	Rock fragments	0.50
				Rock fragments	0.75	Slope	0.50
59D:							
Wharton-------------	45	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
Gilpin--------------	40	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
Berks---------------	15	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Low strength	0.50
				Rock fragments	0.75	Slope	0.50
60C:							
Wharton-------------	45	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
Gilpin--------------	35	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
				Rock fragments	0.50		
Marrowbone----------	20	Well suited		Moderately suited		Well suited	
				Slope	0.50		
				Rock fragments	0.50		
61B:							
Wyrick--------------	55	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
Marbie--------------	40	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
61C:							
Wyrick--------------	55	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
Marbie--------------	40	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
W:							
Water---------------	100	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part IV

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
1E:					
Berks----------------	50	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
Chiswell------------	40	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
1F:					
Berks----------------	45	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
Chiswell------------	45	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
2D:					
Berks----------------	45	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50		
Gilpin--------------	40	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
2E:					
Berks----------------	45	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
Gilpin--------------	40	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
2F:					
Berks----------------	45	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
Gilpin--------------	40	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
3C:					
Berks----------------	55	Poorly suited		Well suited	
		Rock fragments	0.50		
Groseclose----------	40	Well suited		Well suited	
3D:					
Berks----------------	55	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50		

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
3D:					
Groseclose----------	40	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
4D:					
Berks---------------	50	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50		
Poplimento----------	40	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
5C:					
Berks---------------	45	Poorly suited		Well suited	
		Rock fragments	0.50		
Weikert-------------	45	Poorly suited		Unsuited	
		Rock fragments	0.50	Restrictive layer	1.00
5D:					
Berks---------------	45	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50		
Weikert-------------	45	Poorly suited		Unsuited	
		Slope	0.50	Restrictive layer	1.00
		Rock fragments	0.50	Slope	0.50
5E:					
Berks---------------	65	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
Weikert-------------	25	Unsuited		Unsuited	
		Slope	1.00	Restrictive layer	1.00
		Rock fragments	0.50	Slope	1.00
5F:					
Berks---------------	60	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
Weikert-------------	30	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Restrictive layer	1.00
6E:					
Berks---------------	55	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
Westmoreland--------	35	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
6F:					
Berks---------------	65	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
Westmoreland--------	30	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
7E:					
Bland---------------	85	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Stickiness; high plasticity index	0.50		
8D:					
Bland---------------	80	Poorly suited		Poorly suited	
		Stickiness; high plasticity index	0.50	Slope	0.50
		Slope	0.50		
Rock outcrop--------	15	Not rated		Not rated	
8E:					
Bland---------------	80	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Stickiness; high plasticity index	0.50		
Rock outcrop--------	15	Not rated		Not rated	
9D:					
Bland---------------	80	Poorly suited		Poorly suited	
		Stickiness; high plasticity index	0.50	Slope	0.50
		Slope	0.50		
Rock outcrop--------	15	Not rated		Not rated	
10D:					
Calvin--------------	85	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50	Restrictive layer	0.50
11F:					
Calvin--------------	70	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Restrictive layer	0.50
Rough---------------	20	Unsuited		Unsuited	
		Restrictive layer	1.00	Restrictive layer	1.00
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
12C:					
Carbo---------------	50	Poorly suited		Poorly suited	
		Stickiness; high plasticity index	0.50	Restrictive layer	0.50
Beech Grove---------	30	Unsuited		Unsuited	
		Restrictive layer	1.00	Restrictive layer	1.00
12D:					
Carbo---------------	60	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Stickiness; high plasticity index	0.50	Restrictive layer	0.50

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
12D:					
Beech Grove	30	Unsuited		Unsuited	
		Restrictive layer	1.00	Restrictive layer	1.00
		Slope	0.50	Slope	0.50
12E:					
Carbo	60	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Stickiness; high plasticity index	0.50	Restrictive layer	0.50
Beech Grove	30	Unsuited		Unsuited	
		Restrictive layer	1.00	Restrictive layer	1.00
		Slope	0.50	Slope	0.50
12F:					
Carbo	60	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Stickiness; high plasticity index	0.50	Restrictive layer	0.50
Beech Grove	30	Unsuited		Unsuited	
		Restrictive layer	1.00	Restrictive layer	1.00
		Slope	1.00	Slope	1.00
13C:					
Carbo	35	Poorly suited		Poorly suited	
		Stickiness; high plasticity index	0.50	Restrictive layer	0.50
Frederick	34	Well suited		Well suited	
Urban land	30	Not rated		Not rated	
14D:					
Carbo	60	Poorly suited		Poorly suited	
		Stickiness; high plasticity index	0.50	Slope	0.50
		Slope	0.50	Restrictive layer	0.50
Rock outcrop	15	Not rated		Not rated	
14E:					
Carbo	80	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Stickiness; high plasticity index	0.50	Restrictive layer	0.50
Rock outcrop	15	Not rated		Not rated	
15D:					
Carbo	60	Poorly suited		Poorly suited	
		Stickiness; high plasticity index	0.50	Slope	0.50
		Slope	0.50	Restrictive layer	0.50
Rock outcrop	30	Not rated		Not rated	

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
16C:					
Cedarcreek----------	35	Well suited		Well suited	
Sewell--------------	30	Poorly suited		Well suited	
		Rock fragments	0.50		
Rock outcrop--------	10	Not rated		Not rated	
17A:					
Chagrin-------------	90	Well suited		Well suited	
18:					
Dumps, mine---------	85	Not rated		Not rated	
Urban land----------	15	Not rated		Not rated	
19C:					
Frederick-----------	95	Well suited		Well suited	
19D:					
Frederick-----------	95	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
19E:					
Frederick-----------	95	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
19F:					
Frederick-----------	95	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
20C:					
Frederick-----------	95	Well suited		Well suited	
20D:					
Frederick-----------	95	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
21C:					
Frederick-----------	95	Well suited		Well suited	
21D:					
Frederick-----------	95	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
21E:					
Frederick-----------	95	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
21F:					
Frederick-----------	95	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
22C:					
Frederick-----------	95	Well suited		Well suited	
22D:					
Frederick-----------	95	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
23D:					
Gilpin	90	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
24D:					
Gilpin	55	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
Berks	30	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50		
24F:					
Gilpin	55	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
Berks	35	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
25E:					
Gilpin	65	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
Shelocta	30	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
26F:					
Gilpin	60	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
Shelocta	35	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
27A:					
Grigsby	95	Well suited		Well suited	
28C:					
Highsplint	90	Well suited		Well suited	
28D:					
Highsplint	90	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
29F:					
Highsplint	55	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
Shelocta	40	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
30A:					
Holly	97	Unsuited		Unsuited	
		Wetness	0.75	Wetness	1.00
31D:					
Kaymine	90	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50	Rock fragments	0.50

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
32E:					
Kaymine----------	85	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
Cedarcreek----------	15	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
33F:					
Kaymine----------	50	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
Fiveblock----------	45	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
34C:					
Kaymine----------	55	Poorly suited		Poorly suited	
		Rock fragments	0.50	Rock fragments	0.50
Fiveblock----------	25	Poorly suited		Poorly suited	
		Rock fragments	0.50	Rock fragments	0.50
Cedarcreek----------	20	Poorly suited		Poorly suited	
		Rock fragments	0.50	Rock fragments	0.50
35C:					
Lily----------	90	Well suited		Poorly suited	
				Restrictive layer	0.50
35D:					
Lily----------	90	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
				Restrictive layer	0.50
35E:					
Lily----------	90	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
				Restrictive layer	0.50
36A:					
Lobdell----------	65	Well suited		Well suited	
Orrville----------	30	Well suited		Unsuited	
				Wetness	1.00
37D:					
Mandy----------	45	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50		
Paddyknob----------	40	Poorly suited		Poorly suited	
		Rock fragments	0.50	Slope	0.50
		Slope	0.50	Restrictive layer	0.50
Rock outcrop----------	10	Not rated		Not rated	

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
38D:					
Marrowbone----------	85	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
38E:					
Marrowbone----------	85	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
38F:					
Marrowbone----------	85	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
39D:					
Marrowbone----------	50	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
Gilpin--------------	45	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
39E:					
Marrowbone----------	60	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
Gilpin--------------	35	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
39F:					
Marrowbone----------	75	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
Gilpin--------------	15	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
40F:					
Matewan-------------	45	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
Rock outcrop--------	40	Not rated		Not rated	
41A:					
Ogles---------------	90	Poorly suited		Poorly suited	
		Rock fragments	0.50	Rock fragments	0.50
42C:					
Oriskany------------	75	Poorly suited		Poorly suited	
		Rock fragments	0.50	Rock fragments	0.50
42D:					
Oriskany------------	75	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50	Rock fragments	0.50
42E:					
Oriskany------------	75	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
43:					
Pits, quarry--------	95	Not rated		Not rated	

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
44C:					
Poplimento----------	45	Well suited		Well suited	
Westmoreland--------	40	Well suited		Well suited	
45F:					
Ramsey--------------	75	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
				Restrictive layer	1.00
Rock outcrop--------	15	Not rated		Not rated	
46F:					
Rock outcrop--------	45	Not rated		Not rated	
Beech Grove---------	25	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Restrictive layer	1.00	Restrictive layer	1.00
Benthole------------	25	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	1.00	Rock fragments	0.50
47F:					
Sewell--------------	55	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
Kaymine-------------	30	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
Rock outcrop--------	10	Not rated		Not rated	
48E:					
Shelocta------------	70	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
Cedarcreek----------	25	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
49E:					
Shelocta------------	50	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
Highsplint----------	40	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
50F:					
Shelocta------------	55	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
Kaymine-------------	40	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
51F:					
Stonecoal-----------	85	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
52C:					
Tumbling------------	85	Well suited		Well suited	
52D:					
Tumbling------------	80	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
53E:					
Tumbling------------	85	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
54F:					
Udorthents----------	45	Not rated		Not rated	
Urban land----------	30	Not rated		Not rated	
55D:					
Wallen--------------	90	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50	Restrictive layer	0.50
55F:					
Wallen--------------	90	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Restrictive layer	0.50
56D:					
Wallen--------------	65	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50	Rock fragments	0.50
				Restrictive layer	0.50
Rock outcrop--------	25	Not rated		Not rated	
56F:					
Wallen--------------	65	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
				Restrictive layer	0.50
Rock outcrop--------	25	Not rated		Not rated	
57C:					
Watahala------------	95	Poorly suited		Well suited	
		Rock fragments	0.50		
57D:					
Watahala------------	95	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50		
57E:					
Watahala------------	95	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50		

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
57F:					
Watahala------------	90	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
58D:					
Watahala------------	95	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50	Rock fragments	0.50
58E:					
Watahala------------	95	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50	Rock fragments	0.50
59D:					
Wharton-------------	45	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
Gilpin--------------	40	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
Berks---------------	15	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50		
60C:					
Wharton-------------	45	Well suited		Well suited	
Gilpin--------------	35	Well suited		Well suited	
Marrowbone----------	20	Well suited		Well suited	
61B:					
Wyrick--------------	55	Well suited		Well suited	
Marbie--------------	40	Well suited		Well suited	
61C:					
Wyrick--------------	55	Well suited		Well suited	
Marbie--------------	40	Well suited		Well suited	
W:					
Water---------------	100	Not rated		Not rated	

Table 9.—Forestland Management, Part V

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Potential for damage to soil by fire: Value	Potential for seedling mortality: Rating class and limiting features	Potential for seedling mortality: Value
1E:					
Berks	50	Moderate		Low	
		Texture/slope/ rock/fragments	0.50		
Chiswell	40	High		Moderate	
		Texture/slope/ surface depth/ rock fragments	1.00	Soil reaction	0.50
1F:					
Berks	45	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
Chiswell	45	High		Moderate	
		Texture/slope/ surface depth/ rock fragments	1.00	Soil reaction	0.50
2D:					
Berks	45	Moderate		Low	
		Texture/rock fragments	0.50		
Gilpin	40	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
2E:					
Berks	45	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
Gilpin	40	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
2F:					
Berks	45	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
Gilpin	40	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
3C:					
Berks	55	Moderate		Low	
		Texture/rock fragments	0.50		
Groseclose	40	Moderate		Low	
		Texture/rock fragments	0.50		
3D:					
Berks	55	Moderate		Low	
		Texture/rock fragments	0.50		
Groseclose	40	Moderate		Low	
		Texture/rock fragments	0.50		
4D:					
Berks	50	Moderate		Low	
		Texture/rock fragments	0.50		
Poplimento	40	Moderate		Low	
		Texture/rock fragments	0.50		
5C:					
Berks	45	Moderate		Low	
		Texture/rock fragments	0.50		
Weikert	45	Moderate		Moderate	
		Texture/surface depth/rock fragments	0.50	Available water	0.50
5D:					
Berks	45	Moderate		Low	
		Texture/rock fragments	0.50		
Weikert	45	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
5E:					
Berks	65	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
Weikert	25	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
5F:					
Berks----------------	60	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
Weikert-------------	30	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
6E:					
Berks----------------	55	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
Westmoreland---------	35	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
6F:					
Berks----------------	65	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
Westmoreland---------	30	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
7E:					
Bland----------------	85	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
8D:					
Bland----------------	80	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
Rock outcrop---------	15	Not rated		Not rated	
8E:					
Bland----------------	80	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
Rock outcrop---------	15	Not rated		Not rated	
9D:					
Bland----------------	80	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
Rock outcrop---------	15	Not rated		Not rated	

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
10D:					
Calvin	85	Moderate		Low	
		Texture/rock fragments	0.50		
11F:					
Calvin	70	Moderate		Low	
		Texture/rock fragments	0.50		
Rough	20	High		Moderate	
		Texture/slope/ surface depth/ rock fragments	1.00	Soil reaction	0.50
12C:					
Carbo	50	Moderate		Low	
		Texture/rock fragments	0.50		
Beech Grove	30	Moderate		Moderate	
		Texture/surface depth/rock fragments	0.50	Available water	0.50
				Soil reaction	0.50
12D:					
Carbo	60	Moderate		Low	
		Texture/rock fragments	0.50		
Beech Grove	30	Moderate		Moderate	
		Texture/surface depth/rock fragments	0.50	Soil reaction	0.50
12E:					
Carbo	60	High		Low	
		Texture/slope/ rock fragments	1.00		
Beech Grove	30	High		Moderate	
		Texture/slope/ surface depth/ rock fragments	1.00	Soil reaction	0.50
12F:					
Carbo	60	High		Low	
		Texture/slope/ rock fragments	1.00		
Beech Grove	30	High		Moderate	
		Texture/slope/ surface depth/ rock fragments	1.00	Soil reaction	0.50
13C:					
Carbo	35	Moderate		Low	
		Texture/rock fragments	0.50		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
13C:					
Frederick	34	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
Urban land	30	Not rated		Not rated	
14D:					
Carbo	60	Moderate		Low	
		Texture/rock fragments	0.50		
Rock outcrop	15	Not rated		Not rated	
14E:					
Carbo	80	High		Low	
		Texture/slope/ rock fragments	1.00		
Rock outcrop	15	Not rated		Not rated	
15D:					
Carbo	60	Moderate		Low	
		Texture/rock fragments	0.50		
Rock outcrop	30	Not rated		Not rated	
16C:					
Cedarcreek	35	High		Low	
		Texture/surface depth/rock fragments	1.00		
Sewell	30	High		Low	
		Texture/surface depth/rock fragments	1.00		
Rock outcrop	10	Not rated		Not rated	
17A:					
Chagrin	90	Low		Low	
		Texture/rock fragments	0.10		
18:					
Dumps, mine	85	Not rated		Not rated	
Urban land	15	Not rated		Not rated	
19C:					
Frederick	95	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
19D:					
Frederick	95	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
19E:					
Frederick	95	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
19F:					
Frederick	95	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
20C:					
Frederick	95	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
20D:					
Frederick	95	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
21C:					
Frederick	95	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
21D:					
Frederick	95	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
21E:					
Frederick	95	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
21F:					
Frederick	95	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
22C:					
Frederick	95	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
22D:					
Frederick-----------	95	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
23D:					
Gilpin--------------	90	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
24D:					
Gilpin--------------	55	Moderate		Moderate	
		Texture/slope/ surface depth/ rock fragments	0.50	Available water	0.50
Berks---------------	30	Moderate		Moderate	
		Texture/slope/ surface depth/ rock fragments	0.50	Available water	0.50
24F:					
Gilpin--------------	55	Moderate		Moderate	
		Texture/slope/ surface depth/ rock fragments	0.50	Available water	0.50
Berks---------------	35	Moderate		Moderate	
		Texture/slope/ surface depth/ rock fragments	0.50	Available water	0.50
25E:					
Gilpin--------------	65	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
Shelocta------------	30	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
26F:					
Gilpin--------------	60	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
Shelocta------------	35	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
27A:					
Grigsby-------------	95	Low		Low	
		Texture/rock fragments	0.10		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
28C:					
Highsplint----------	90	High		Low	
		Texture/surface depth/rock fragments	1.00		
28D:					
Highsplint----------	90	High		Moderate	
		Texture/surface depth/rock fragments	1.00	Available water	0.50
29F:					
Highsplint----------	55	High		Moderate	
		Texture/slope/ surface depth/ rock fragments	1.00	Available water	0.50
Shelocta------------	40	High		Moderate	
		Texture/slope/ surface depth/ rock fragments	1.00	Available water	0.50
30A:					
Holly---------------	97	Low		High	
		Texture/surface depth/rock fragments	0.10	Wetness	1.00
31D:					
Kaymine-------------	90	High		Moderate	
		Texture/surface depth/rock fragments	1.00	Available water	0.50
32E:					
Kaymine-------------	85	High		Moderate	
		Texture/slope/ surface depth/ rock fragments	1.00	Available water	0.50
Cedarcreek----------	15	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
33F:					
Kaymine-------------	50	High		Moderate	
		Texture/slope/ surface depth/ rock fragments	1.00	Available water	0.50
Fiveblock-----------	45	High		Moderate	
		Texture/slope/ rock fragments	1.00	Available water	0.50

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
34C:					
Kaymine	55	High		Low	
		Texture/surface depth/rock fragments	1.00		
Fiveblock	25	High		Low	
		Texture/rock fragments	1.00		
Cedarcreek	20	High		Low	
		Texture/surface depth/rock fragments	1.00		
35C:					
Lily	90	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
35D:					
Lily	90	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
35E:					
Lily	90	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
36A:					
Lobdell	65	Low		Low	
		Texture/rock fragments	0.10		
Orrville	30	Low		Moderate	
		Texture/rock fragments	0.10	Wetness	0.50
37D:					
Mandy	45	Moderate		Moderate	
		Texture/surface depth/rock fragments	0.50	Soil reaction	0.50
Paddyknob	40	High		Moderate	
		Texture/surface depth/rock fragments	1.00	Soil reaction	0.50
Rock outcrop	10	Not rated		Not rated	
38D:					
Marrowbone	85	Moderate		Moderate	
		Texture/rock fragments	0.50	Available water	0.50

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
38E:					
Marrowbone----------	85	Moderate		Moderate	
		Texture/slope/ rock fragments	0.50	Available water	0.50
38F:					
Marrowbone----------	85	Moderate		Moderate	
		Texture/slope/ rock fragments	0.50	Available water	0.50
39D:					
Marrowbone----------	50	Moderate		Moderate	
		Texture/rock fragments	0.50	Available water	0.50
Gilpin--------------	45	Moderate		Moderate	
		Texture/surface depth/rock fragments	0.50	Available water	0.50
39E:					
Marrowbone----------	60	Moderate		Moderate	
		Texture/slope/ rock fragments	0.50	Available water	0.50
Gilpin--------------	35	Moderate		Moderate	
		Texture/slope/ surface depth/ rock fragments	0.50	Available water	0.50
39F:					
Marrowbone----------	75	Moderate		Moderate	
		Texture/slope/ rock fragments	0.50	Available water	0.50
Gilpin--------------	15	Moderate		Moderate	
		Texture/slope/ surface depth/ rock fragments	0.50	Available water	0.50
40F:					
Matewan-------------	45	High		Moderate	
		Texture/slope/ surface depth/ rock fragments	1.00	Available water	0.50
Rock outcrop--------	40	Not rated		Not rated	
41A:					
Ogles---------------	90	Low		Low	
		Texture/rock fragments	0.10		
42C:					
Oriskany------------	75	Moderate		Low	
		Texture/rock fragments	0.50		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
42D:					
Oriskany------------	75	Moderate		Low	
		Texture/rock fragments	0.50		
42E:					
Oriskany------------	75	High		Low	
		Texture/slope/ rock fragments	1.00		
43:					
Pits, quarry--------	95	Not rated		Not rated	
44C:					
Poplimento----------	45	Moderate		Low	
		Texture/rock fragments	0.50		
Westmoreland--------	40	Moderate		Low	
		Texture/rock fragments	0.50		
45F:					
Ramsey--------------	75	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
Rock outcrop--------	15	Not rated		Not rated	
46F:					
Rock outcrop--------	45	Not rated		Not rated	
Beech Grove---------	25	High		Moderate	
		Texture/slope/ surface depth/ rock fragments	1.00	Soil reaction	0.50
Benthole------------	25	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
47F:					
Sewell--------------	55	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
Kaymine-------------	30	High		Moderate	
		Texture/slope/ surface depth/ rock fragments	1.00	Available water	0.50
Rock outcrop--------	10	Not rated		Not rated	
48E:					
Shelocta------------	70	High		Moderate	
		Texture/slope/ surface depth/ rock fragments	1.00	Available water	0.50

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
48E:					
Cedarcreek----------	25	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
49E:					
Shelocta-----------	50	High		Moderate	
		Texture/slope/ surface depth/ rock fragments	1.00	Available water	0.50
Highsplint----------	40	High		Moderate	
		Texture/slope/ surface depth/ rock fragments	1.00	Available water	0.50
50F:					
Shelocta-----------	55	High		Moderate	
		Texture/slope/ surface depth/ rock fragments	1.00	Available water	0.50
Kaymine-------------	40	High		Moderate	
		Texture/slope/ surface depth/ rock fragments	1.00	Available water	0.50
51F:					
Stonecoal-----------	85	High		Low	
		Texture/rock fragments	1.00		
52C:					
Tumbling-----------	85	Moderate		Low	
		Texture/rock fragments	0.50		
52D:					
Tumbling-----------	80	Moderate		Low	
		Texture/rock fragments	0.50		
53E:					
Tumbling-----------	85	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
54F:					
Udorthents----------	45	Not rated		Not rated	
Urban land----------	30	Not rated		Not rated	
55D:					
Wallen--------------	90	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
55F:					
Wallen	90	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
56D:					
Wallen	65	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
Rock outcrop	25	Not rated		Not rated	
56F:					
Wallen	65	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
Rock outcrop	25	Not rated		Not rated	
57C:					
Watahala	95	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
57D:					
Watahala	95	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
57E:					
Watahala	95	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
57F:					
Watahala	90	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
58D:					
Watahala	95	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
58E:					
Watahala	95	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
59D:					
Wharton	45	Moderate		Moderate	
		Texture/surface depth/rock fragments	0.50	Available water	0.50
Gilpin	40	Moderate		Moderate	
		Texture/surface depth/rock fragments	0.50	Available water	0.50
Berks	15	Moderate		Moderate	
		Texture/surface depth/rock fragments	0.50	Available water	0.50
60C:					
Wharton	45	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
Gilpin	35	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
Marrowbone	20	Moderate		Low	
		Texture/rock fragments	0.50		
61B:					
Wyrick	55	Moderate		Low	
		Texture/rock fragments	0.50		
Marbie	40	Moderate		Low	
		Texture/rock fragments	0.50		
61C:					
Wyrick	55	Moderate		Low	
		Texture/rock fragments	0.50		
Marbie	40	Moderate		Low	
		Texture/rock fragments	0.50		
W:					
Water	100	Not rated		Not rated	

Table 10.—Recreational Development, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1E:							
Berks	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.03	Gravel content	0.03	Gravel content	1.00
						Depth to bedrock	0.01
Chiswell	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Gravel content	1.00	Gravel content	1.00	Depth to bedrock	1.00
1F:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.03	Gravel content	0.03	Gravel content	1.00
						Depth to bedrock	0.01
Chiswell	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Gravel content	1.00	Gravel content	1.00	Depth to bedrock	1.00
2D:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.03	Gravel content	0.03	Gravel content	1.00
						Depth to bedrock	0.01
Gilpin	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.35
2E:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.03	Gravel content	0.03	Gravel content	1.00
						Depth to bedrock	0.01
Gilpin	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.35
2F:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.03	Gravel content	0.03	Gravel content	1.00
						Depth to bedrock	0.01
Gilpin	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.19	Large stones content	0.19	Depth to bedrock	0.35
						Large stones content	0.19

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
3C:							
Berks	55	Somewhat limited Slope Gravel content	 0.63 0.03	Somewhat limited Slope Gravel content	 0.63 0.03	Very limited Slope Gravel content Depth to bedrock	 1.00 1.00 0.01
Groseclose	40	Somewhat limited Slow water movement Slope	 0.96 0.63	Somewhat limited Slow water movement Slope	 0.96 0.63	Very limited Slope Slow water movement	 1.00 0.96
3D:							
Berks	55	Very limited Slope Gravel content	 1.00 0.03	Very limited Slope Gravel content	 1.00 0.03	Very limited Slope Gravel content Depth to bedrock	 1.00 1.00 0.01
Groseclose	40	Very limited Slope Slow water movement	 1.00 0.96	Very limited Slope Slow water movement	 1.00 0.96	Very limited Slope Slow water movement	 1.00 0.96
4D:							
Berks	50	Very limited Slope Gravel content	 1.00 0.03	Very limited Slope Gravel content	 1.00 0.03	Very limited Slope Gravel content Depth to bedrock	 1.00 1.00 0.01
Poplimento	40	Very limited Slope Slow water movement	 1.00 0.26	Very limited Slope Slow water movement	 1.00 0.26	Very limited Slope Slow water movement	 1.00 0.26
5C:							
Berks	45	Somewhat limited Slope Gravel content	 0.63 0.03	Somewhat limited Slope Gravel content	 0.63 0.03	Very limited Slope Gravel content Depth to bedrock	 1.00 1.00 0.01
Weikert	45	Very limited Depth to bedrock Slope Gravel content	 1.00 0.63 0.06	Very limited Depth to bedrock Slope Gravel content	 1.00 0.63 0.06	Very limited Slope Depth to bedrock Gravel content	 1.00 1.00 1.00
5D:							
Berks	45	Very limited Slope Gravel content	 1.00 0.03	Very limited Slope Gravel content	 1.00 0.03	Very limited Slope Gravel content Depth to bedrock	 1.00 1.00 0.01
Weikert	45	Very limited Slope Depth to bedrock Gravel content	 1.00 1.00 0.06	Very limited Slope Depth to bedrock Gravel content	 1.00 1.00 0.06	Very limited Slope Depth to bedrock Gravel content	 1.00 1.00 1.00
5E:							
Berks	65	Very limited Slope Gravel content	 1.00 0.03	Very limited Slope Gravel content	 1.00 0.03	Very limited Slope Gravel content Depth to bedrock	 1.00 1.00 0.01

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
5E:							
Weikert-------------	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Gravel content	0.06	Gravel content	0.06	Gravel content	1.00
5F:							
Berks---------------	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.03	Gravel content	0.03	Gravel content	1.00
						Depth to bedrock	0.01
Weikert-------------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Gravel content	0.06	Gravel content	0.06	Gravel content	1.00
6E:							
Berks---------------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.03	Gravel content	0.03	Gravel content	1.00
						Depth to bedrock	0.01
Westmoreland--------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
6F:							
Berks---------------	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.03	Gravel content	0.03	Gravel content	1.00
						Depth to bedrock	0.01
Westmoreland--------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
7E:							
Bland---------------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.26	Slow water movement	0.26	Slow water movement	0.26
						Depth to bedrock	0.06
8D:							
Bland---------------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.26	Slow water movement	0.26	Slow water movement	0.26
						Depth to bedrock	0.06
Rock outcrop--------	15	Not rated		Not rated		Not rated	
8E:							
Bland---------------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.26	Slow water movement	0.26	Slow water movement	0.26
						Depth to bedrock	0.06
Rock outcrop--------	15	Not rated		Not rated		Not rated	

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
9D:							
Bland	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.26	Slow water movement	0.26	Slow water movement	0.26
						Depth to bedrock	0.06
Rock outcrop	15	Not rated		Not rated		Not rated	
10D:							
Calvin	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.46
						Gravel content	0.01
11F:							
Calvin	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.53	Large stones content	0.53	Large stones content	0.53
						Depth to bedrock	0.46
Rough	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Large stones content	0.53	Large stones content	0.53	Gravel content	1.00
12C:							
Carbo	50	Somewhat limited		Somewhat limited		Very limited	
		Slow water movement	0.96	Slow water movement	0.96	Slope	1.00
		Slope	0.63	Slope	0.63	Slow water movement	0.96
						Depth to bedrock	0.54
Beech Grove	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to bedrock	1.00
		Gravel content	0.48	Gravel content	0.48	Gravel content	1.00
12D:							
Carbo	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
						Depth to bedrock	0.54
Beech Grove	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Gravel content	0.48	Gravel content	0.48	Gravel content	1.00
12E:							
Carbo	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
						Depth to bedrock	0.54

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
12E:							
Beech Grove	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Gravel content	0.48	Gravel content	0.48	Gravel content	1.00
12F:							
Carbo	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
						Depth to bedrock	0.54
Beech Grove	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Gravel content	0.48	Gravel content	0.48	Gravel content	1.00
13C:							
Carbo	35	Somewhat limited		Somewhat limited		Very limited	
		Slow water movement	0.96	Slow water movement	0.96	Slope	1.00
		Slope	0.01	Slope	0.01	Slow water movement	0.96
						Depth to bedrock	0.54
Frederick	34	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.01	Slope	0.01	Slope	1.00
Urban land	30	Not rated		Not rated		Not rated	
14D:							
Carbo	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
						Depth to bedrock	0.54
Rock outcrop	15	Not rated		Not rated		Not rated	
14E:							
Carbo	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
						Depth to bedrock	0.54
Rock outcrop	15	Not rated		Not rated		Not rated	
15D:							
Carbo	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
						Depth to bedrock	0.54
Rock outcrop	30	Not rated		Not rated		Not rated	

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
16C:							
Cedarcreek----------	35	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.97	Gravel content	0.97	Gravel content	1.00
		Large stones content	0.53	Large stones content	0.53	Slope	1.00
		Slope	0.01	Slope	0.01	Large stones content	0.53
Sewell--------------	30	Somewhat limited		Somewhat limited		Very limited	
		Large stones content	0.76	Large stones content	0.76	Gravel content	1.00
		Gravel content	0.08	Gravel content	0.08	Slope	1.00
		Slope	0.01	Slope	0.01	Large stones content	0.76
Rock outcrop--------	10	Not rated		Not rated		Not rated	
17A:							
Chagrin-------------	90	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Flooding	0.60
18:							
Dumps, mine---------	85	Not rated		Not rated		Not rated	
Urban land----------	15	Not rated		Not rated		Not rated	
19C:							
Frederick-----------	95	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
19D:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
19E:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
19F:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
20C:							
Frederick-----------	95	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
20D:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
21C:							
Frederick-----------	95	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
		Gravel content	0.08	Gravel content	0.08	Gravel content	1.00
21D:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.08	Gravel content	0.08	Gravel content	1.00

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
21E:							
Frederick	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.08	Gravel content	0.08	Gravel content	1.00
21F:							
Frederick	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.08	Gravel content	0.08	Gravel content	1.00
22C:							
Frederick	95	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
		Gravel content	0.08	Gravel content	0.08	Gravel content	1.00
22D:							
Frederick	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.08	Gravel content	0.08	Gravel content	1.00
23D:							
Gilpin	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.35
24D:							
Gilpin	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.10
Berks	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.16
24F:							
Gilpin	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.10
Berks	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.16
25E:							
Gilpin	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.47	Large stones content	0.47	Large stones content	0.47
						Depth to bedrock	0.35
Shelocta	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.53	Large stones content	0.53	Large stones content	0.53

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
26F:							
Gilpin	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.19	Large stones content	0.19	Depth to bedrock	0.35
						Large stones content	0.19
Shelocta	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.53	Large stones content	0.53	Large stones content	0.53
27A:							
Grigsby	95	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Flooding	0.60
28C:							
Highsplint	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
		Large stones content	0.31	Large stones content	0.31	Gravel content	0.68
						Large stones content	0.31
28D:							
Highsplint	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.31	Large stones content	0.31	Gravel content	0.68
						Large stones content	0.31
29F:							
Highsplint	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.31	Large stones content	0.31	Gravel content	0.68
						Large stones content	0.31
Shelocta	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	0.32	Gravel content	0.32	Slope	1.00
		Large stones content	0.31	Large stones content	0.31	Large stones content	0.31
30A:							
Holly	97	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00			Flooding	0.60
31D:							
Kaymine	90	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Large stones content	1.00
		Large stones content	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	0.99	Gravel content	0.99	Slope	1.00

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
32E:							
Kaymine	85	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Large stones content	1.00
		Large stones content	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	0.99	Gravel content	0.99	Slope	1.00
Cedarcreek	15	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Large stones content	1.00
		Large stones content	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	0.97	Gravel content	0.97	Slope	1.00
33F:							
Kaymine	50	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Large stones content	1.00
		Large stones content	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	0.99	Gravel content	0.99	Slope	1.00
Fiveblock	45	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Large stones content	1.00
		Large stones content	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.94	Gravel content	0.94	Gravel content	1.00
34C:							
Kaymine	55	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Large stones content	1.00
		Gravel content	0.99	Gravel content	0.99	Gravel content	1.00
		Slope	0.01	Slope	0.01	Slope	1.00
Fiveblock	25	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Large stones content	1.00
		Gravel content	0.94	Gravel content	0.94	Gravel content	1.00
		Slope	0.01	Slope	0.01	Slope	1.00
Cedarcreek	20	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Large stones content	1.00
		Gravel content	0.97	Gravel content	0.97	Gravel content	1.00
		Slope	0.01	Slope	0.01	Slope	1.00
35C:							
Lily	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
						Depth to bedrock	0.65
35D:							
Lily	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.65
35E:							
Lily	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.65

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
36A:							
Lobdell	65	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Depth to saturated zone	0.19	Flooding	0.60
		Depth to saturated zone	0.39			Depth to saturated zone	0.39
Orrville	30	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Flooding	1.00			Flooding	0.60
37D:							
Mandy	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.76	Large stones content	0.76	Gravel content	0.97
						Large stones content	0.76
Paddyknob	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Large stones content	0.76	Large stones content	0.76	Slope	1.00
		Gravel content	0.76	Gravel content	0.76	Depth to bedrock	0.80
Rock outcrop	10	Not rated		Not rated		Not rated	
38D:							
Marrowbone	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.76	Large stones content	0.76	Large stones content	0.76
						Depth to bedrock	0.20
38E:							
Marrowbone	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.76	Large stones content	0.76	Large stones content	0.76
						Depth to bedrock	0.20
38F:							
Marrowbone	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.76	Large stones content	0.76	Large stones content	0.76
						Depth to bedrock	0.20
39D:							
Marrowbone	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.20
Gilpin	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.10
39E:							
Marrowbone	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.20

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
39E:							
Gilpin	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.10
39F:							
Marrowbone	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.20
Gilpin	15	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.10
40F:							
Matewan	45	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Large stones content	1.00
		Large stones content	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.20
Rock outcrop	40	Not rated		Not rated		Not rated	
41A:							
Ogles	90	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Large stones content	0.77	Large stones content	0.77
		Large stones content	0.77			Flooding	0.60
42C:							
Oriskany	75	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Large stones content	1.00
		Slope	0.63	Slope	0.63	Slope	1.00
		Gravel content	0.11	Gravel content	0.11	Gravel content	1.00
42D:							
Oriskany	75	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Large stones content	1.00
		Large stones content	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.11	Gravel content	0.11	Gravel content	1.00
42E:							
Oriskany	75	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Large stones content	1.00
		Large stone content	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.11	Gravel content	0.11	Gravel content	1.00
43:							
Pits, quarry	95	Not rated		Not rated		Not rated	
44C:							
Poplimento	45	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
		Slow water movement	0.26	Slow water movement	0.26	Slow water movement	0.26
Westmoreland	40	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
45F:							
Ramsey	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
Rock outcrop	15	Not rated		Not rated		Not rated	
46F:							
Rock outcrop	45	Not rated		Not rated		Not rated	
Beech Grove	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Gravel content	0.48	Gravel content	0.48	Gravel content	1.00
Benthole	25	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Large stones content	1.00
		Large stones content	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.16	Gravel content	0.16	Gravel content	1.00
47F:							
Sewell	55	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Large stones content	1.00
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	0.08	Gravel content	0.08	Slope	1.00
Kaymine	30	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Large stones content	1.00
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	0.99	Gravel content	0.99	Slope	1.00
Rock outcrop	10	Not rated		Not rated		Not rated	
48E:							
Shelocta	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	0.32	Gravel content	0.32	Slope	1.00
		Large stones content	0.31	Large stones content	0.31	Large stones content	0.31
Cedarcreek	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	0.97	Gravel content	0.97	Slope	1.00
		Large stones content	0.31	Large stones content	0.31	Large stones content	0.31
49E:							
Shelocta	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	0.32	Gravel content	0.32	Slope	1.00
		Large stones content	0.31	Large stones content	0.31	Large stones content	0.31
Highsplint	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.31	Large stones content	0.31	Gravel content	0.68
						Large stones content	0.31

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
50F:							
Shelocta------------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	0.32	Gravel content	0.32	Slope	1.00
		Large stones content	0.31	Large stones content	0.31	Large stones content	0.31
Kaymine-------------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	0.99	Gravel content	0.99	Slope	1.00
		Large stones content	0.31	Large stones content	0.31	Large stones content	0.31
51F:							
Stonecoal-----------	85	Very limited		Very limited		Very limited	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.02	Large stones content	0.02	Large stones content	0.02
52C:							
Tumbling------------	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
52D:							
Tumbling------------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
53E:							
Tumbling------------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.94	Large stones content	0.94	Large stones content	0.94
54F:							
Udorthents----------	45	Not rated		Not rated		Not rated	
Urban land----------	30	Not rated		Not rated		Not rated	
55D:							
Wallen--------------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.47	Large stones content	0.47	Gravel content	1.00
		Gravel content	0.04	Gravel content	0.04	Depth to bedrock	0.90
55F:							
Wallen--------------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.47	Large stones content	0.47	Gravel content	1.00
		Gravel content	0.04	Gravel content	0.04	Depth to bedrock	0.90
56D:							
Wallen--------------	65	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Large stones content	1.00
		Large stones content	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.04	Gravel content	0.04	Gravel content	1.00
Rock outcrop--------	25	Not rated		Not rated		Not rated	

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
56F:							
Wallen	65	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Large stones content	1.00
		Large stones content	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.04	Gravel content	0.04	Gravel content	1.00
Rock outcrop	25	Not rated		Not rated		Not rated	
57C:							
Watahala	95	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.92	Gravel content	0.92	Slope	1.00
		Slope	0.63	Slope	0.63	Gravel content	1.00
57D:							
Watahala	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.92	Gravel content	0.92	Gravel content	1.00
57E:							
Watahala	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.92	Gravel content	0.92	Gravel content	1.00
57F:							
Watahala	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.92	Gravel content	0.92	Gravel content	1.00
58D:							
Watahala	95	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Large stones content	1.00
		Large stones content	1.00				
			1.00	Slope	1.00	Slope	1.00
		Gravel content	0.92	Gravel content	0.92	Gravel content	1.00
58E:							
Watahala	95	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Large stones content	1.00
		Large stones content	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.92	Gravel content	0.92	Gravel content	1.00
59D:							
Wharton	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.93	Depth to saturated zone	0.64	Depth to saturated zone	0.93
		Slow water movement	0.55	Slow water movement	0.55	Slow water movement	0.55
Gilpin	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.10
Berks	15	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.16

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
60C:							
Wharton	45	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.93	Depth to saturated zone	0.64	Slope	1.00
		Slow water movement	0.55	Slow water movement	0.55	Depth to saturated zone	0.93
		Slope	0.16	Slope	0.16	Slow water movement	0.55
Gilpin	35	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.16	Slope	0.16	Slope	1.00
						Depth to bedrock	0.10
Marrowbone	20	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.16	Slope	0.16	Slope	1.00
						Depth to bedrock	0.20
61B:							
Wyrick	55	Not limited		Not limited		Very limited	
						Slope	1.00
Marbie	40	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.39	Depth to saturated zone	0.19	Slope	1.00
		Depth to cemented pan	0.06	Depth to cemented pan	0.06	Depth to saturated zone	0.39
						Gravel content	0.22
61C:							
Wyrick	55	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
Marbie	40	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
		Depth to saturated zone	0.39	Depth to saturated zone	0.19	Depth to saturated zone	0.39
		Depth to cemented pan	0.06	Depth to cemented pan	0.06	Gravel content	0.22
W:							
Water	100	Not rated		Not rated		Not rated	

Table 10.—Recreational Development, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
1E:							
Berks	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Droughty	0.04
						Gravel content	0.03
Chiswell	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00
1F:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Droughty	0.04
						Gravel content	0.03
Chiswell	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00
2D:							
Berks	45	Very limited		Not limited		Very limited	
		Slope	1.00			Slope	1.00
						Droughty	0.04
						Gravel content	0.03
Gilpin	40	Very limited		Not limited		Very limited	
		Slope	1.00			Slope	1.00
						Depth to bedrock	0.35
2E:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Droughty	0.04
						Gravel content	0.03
Gilpin	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.35
2F:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Droughty	0.04
						Gravel content	0.03
Gilpin	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.19	Large stones content	0.19	Depth to bedrock	0.35

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
3C:							
Berks---------------	55	Not limited		Not limited		Somewhat limited	
						Slope	0.63
						Droughty	0.04
						Gravel content	0.03
Groseclose----------	40	Not limited		Not limited		Somewhat limited	
						Slope	0.63
3D:							
Berks---------------	55	Very limited		Not limited		Very limited	
		Slope	1.00			Slope	1.00
						Droughty	0.04
						Gravel content	0.03
Groseclose----------	40	Very limited		Not limited		Very limited	
		Slope	1.00			Slope	1.00
4D:							
Berks---------------	50	Very limited		Not limited		Very limited	
		Slope	1.00			Slope	1.00
						Droughty	0.04
						Gravel content	0.03
Poplimento----------	40	Very limited		Not limited		Very limited	
		Slope	1.00			Slope	1.00
5C:							
Berks---------------	45	Not limited		Not limited		Somewhat limited	
						Slope	0.63
						Droughty	0.04
						Gravel content	0.03
Weikert------------	45	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	1.00
						Slope	0.63
5D:							
Berks---------------	45	Very limited		Not limited		Very limited	
		Slope	1.00			Slope	1.00
						Droughty	0.04
						Gravel content	0.03
Weikert------------	45	Very limited		Not limited		Very limited	
		Slope	1.00			Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00
5E:							
Berks---------------	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Droughty	0.04
						Gravel content	0.03
Weikert------------	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
5F:							
Berks----------------	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Droughty	0.04
						Gravel content	0.03
Weikert--------------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00
6E:							
Berks----------------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Droughty	0.04
						Gravel content	0.03
Westmoreland---------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Water erosion	1.00	Slope	1.00		
6F:							
Berks----------------	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Droughty	0.04
						Gravel content	0.03
Westmoreland---------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Water erosion	1.00	Water erosion	1.00		
7E:							
Bland----------------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Water erosion	1.00	Slope	0.92	Depth to bedrock	0.06
8D:							
Bland----------------	80	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	0.08			Depth to bedrock	0.06
Rock outcrop---------	15	Not rated		Not rated		Not rated	
8E:							
Bland----------------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Water erosion	1.00	Slope	0.96	Depth to bedrock	0.06
Rock outcrop---------	15	Not rated		Not rated		Not rated	
9D:							
Bland----------------	80	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	0.82			Depth to bedrock	0.06
Rock outcrop---------	15	Not rated		Not rated		Not rated	

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
10D:							
Calvin	85	Very limited		Not limited		Very limited	
		Slope	1.00			Slope	1.00
						Depth to bedrock	0.46
						Droughty	0.02
11F:							
Calvin	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.53	Large stones content	0.53	Depth to bedrock	0.46
						Droughty	0.02
Rough	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Large stones content	0.53	Large stones content	0.53	Slope	1.00
						Droughty	1.00
12C:							
Carbo	50	Not limited		Not limited		Somewhat limited	
						Slope	0.63
						Depth to bedrock	0.54
						Droughty	0.06
Beech Grove	30	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	1.00
						Slope	0.63
12D:							
Carbo	60	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Depth to bedrock	0.54
						Droughty	0.06
Beech Grove	30	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00
12E:							
Carbo	60	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.22	Slope	1.00
						Depth to bedrock	0.54
						Droughty	0.06
Beech Grove	30	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.22	Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00
12F:							
Carbo	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.54
						Droughty	0.06
Beech Grove	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
13C:							
Carbo	35	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.54
						Droughty	0.06
						Slope	0.01
Frederick	34	Not limited		Not limited		Somewhat limited	
						Slope	0.01
Urban land	30	Not rated		Not rated		Not rated	
14D:							
Carbo	60	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Depth to bedrock	0.54
						Droughty	0.06
Rock outcrop	15	Not rated		Not rated		Not rated	
14E:							
Carbo	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.54
						Droughty	0.06
Rock outcrop	15	Not rated		Not rated		Not rated	
15D:							
Carbo	60	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Depth to bedrock	0.54
						Droughty	0.06
Rock outcrop	30	Not rated		Not rated		Not rated	
16C:							
Cedarcreek	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Large stones content	0.53	Large stones content	0.53	Gravel content	0.97
						Droughty	0.88
						Large stones content	0.38
Sewell	30	Somewhat limited		Somewhat limited		Very limited	
		Large stones content	0.76	Large stones content	0.76	Droughty	1.00
						Large stones content	0.26
						Gravel content	0.08
Rock outcrop	10	Not rated		Not rated		Not rated	
17A:							
Chagrin	90	Not limited		Not limited		Somewhat limited	
						Flooding	0.60
18:							
Dumps, mine	85	Not rated		Not rated		Not rated	
Urban land	15	Not rated		Not rated		Not rated	

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
19C:							
Frederick-----------	95	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Slope	0.63
19D:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	0.50				
19E:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Water erosion	1.00	Slope	0.22		
19F:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Water erosion	1.00	Slope	1.00		
20C:							
Frederick-----------	95	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Slope	0.63
20D:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	0.50				
21C:							
Frederick-----------	95	Not limited		Not limited		Somewhat limited	
						Slope	0.63
						Gravel content	0.08
21D:							
Frederick-----------	95	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Gravel content	0.08
21E:							
Frederick-----------	95	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.22	Slope	1.00
						Gravel content	0.08
21F:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.08
22C:							
Frederick-----------	95	Not limited		Not limited		Somewhat limited	
						Slope	0.63
						Gravel content	0.08
22D:							
Frederick-----------	95	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Gravel content	0.08

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
23D:							
Gilpin	90	Very limited		Not limited		Very limited	
		Slope	1.00			Slope	1.00
						Depth to bedrock	0.35
24D:							
Gilpin	55	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Water erosion	1.00	Slope	0.22	Depth to bedrock	0.10
Berks	30	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Water erosion	1.00	Slope	0.22	Depth to bedrock	0.16
						Droughty	0.09
24F:							
Gilpin	55	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Water erosion	1.00	Slope	1.00	Depth to bedrock	0.10
Berks	35	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Water erosion	1.00	Slope	1.00	Depth to bedrock	0.16
						Droughty	0.09
25E:							
Gilpin	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.47	Large stones content	0.47	Depth to bedrock	0.35
Shelocta	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.53	Large stones content	0.53		
26F:							
Gilpin	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.19	Large stones content	0.19	Depth to bedrock	0.35
Shelocta	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.53	Large stones content	0.53		
27A:							
Grigsby	95	Not limited		Not limited		Somewhat limited	
						Flooding	0.60
28C:							
Highsplint	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Large stones content	0.31	Large stones content	0.31	Slope	0.37
						Large stones content	0.01

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
28D:							
Highsplint----------	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Large stones content	0.31	Slope	1.00
		Large stones content	0.31			Large stones content	0.01
29F:							
Highsplint----------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.31	Large stones content	0.31	Large stones content	0.01
Shelocta------------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.31	Large stones content	0.31	Gravel content	0.32
30A:							
Holly---------------	97	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
						Flooding	0.60
31D:							
Kaymine-------------	90	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00			Gravel content	0.99
						Droughty	0.01
32E:							
Kaymine-------------	85	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Gravel content	0.99
						Droughty	0.01
Cedarcreek----------	15	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Gravel content	0.97
						Droughty	0.88
33F:							
Kaymine-------------	50	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Gravel content	0.99
						Droughty	0.01
Fiveblock-----------	45	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Droughty	0.99
						Gravel content	0.94
34C:							
Kaymine-------------	55	Very limited		Very limited		Somewhat limited	
		Large stones content	1.00	Large stones content	1.00	Gravel content	0.99
						Droughty	0.01
						Slope	0.01

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
34C:							
Fiveblock-----------	25	Very limited		Very limited		Somewhat limited	
		Large stones content	1.00	Large stones content	1.00	Droughty	0.99
						Gravel content	0.94
						Large stones content	0.46
Cedarcreek----------	20	Very limited		Very limited		Somewhat limited	
		Large stones content	1.00	Large stones content	1.00	Gravel content	0.97
						Droughty	0.88
						Large stones content	0.38
35C:							
Lily----------------	90	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.65
						Slope	0.63
35D:							
Lily----------------	90	Very limited		Not limited		Very limited	
		Slope	1.00			Slope	1.00
						Depth to bedrock	0.65
35E:							
Lily----------------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.65
36A:							
Lobdell-------------	65	Not limited		Not limited		Somewhat limited	
						Flooding	0.60
						Depth to saturated zone	0.19
Orrville------------	30	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Flooding	0.60
37D:							
Mandy---------------	45	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.92	Large stones content	0.76	Slope	1.00
		Large stones content	0.76			Depth to bedrock	0.03
Paddyknob-----------	40	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.92	Large stones content	0.76	Slope	1.00
		Large stones content	0.76			Droughty	0.99
						Depth to bedrock	0.80
Rock outcrop--------	10	Not rated		Not rated		Not rated	
38D:							
Marrowbone----------	85	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Large stones content	0.76	Slope	1.00
		Large stones content	0.76			Droughty	0.75
						Depth to bedrock	0.20

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
38E:							
Marrowbone----------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.76	Large stones content	0.76	Droughty	0.75
						Depth to bedrock	0.20
38F:							
Marrowbone----------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.76	Large stones content	0.76	Droughty	0.75
						Depth to bedrock	0.20
39D:							
Marrowbone----------	50	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Droughty	0.75
						Depth to bedrock	0.20
Gilpin--------------	45	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	0.50			Depth to bedrock	0.10
39E:							
Marrowbone----------	60	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.22	Slope	1.00
						Droughty	0.75
						Depth to bedrock	0.20
Gilpin--------------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Water erosion	1.00	Slope	0.22	Depth to bedrock	0.10
39F:							
Marrowbone----------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Droughty	0.75
						Depth to bedrock	0.20
Gilpin--------------	15	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Water erosion	1.00	Slope	1.00	Depth to bedrock	0.10
40F:							
Matewan-------------	45	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Large stones content	0.54
						Droughty	0.41
Rock outcrop--------	40	Not rated		Not rated		Not rated	
41A:							
Ogles---------------	90	Somewhat limited		Somewhat limited		Very limited	
		Large stones content	0.77	Large stones content	0.77	Large stones content	1.00
						Flooding	0.60

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
42C:							
Oriskany	75	Very limited		Very limited		Somewhat limited	
		Large stones content	1.00	Large stones content	1.00	Large stones content	0.92
						Slope	0.63
						Gravel content	0.11
42D:							
Oriskany	75	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00			Large stones content	0.92
						Gravel content	0.11
42E:							
Oriskany	75	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Large stones content	0.92
						Gravel content	0.11
43:							
Pits, quarry	95	Not rated		Not rated		Not rated	
44C:							
Poplimento	45	Not limited		Not limited		Somewhat limited	
						Slope	0.63
Westmoreland	40	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Slope	0.63
45F:							
Ramsey	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00
Rock outcrop	15	Not rated		Not rated		Not rated	
46F:							
Rock outcrop	45	Not rated		Not rated		Not rated	
Beech Grove	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Large stones content	0.04	Large stones content	0.04	Slope	1.00
						Droughty	1.00
Benthole	25	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Gravel content	0.16
47F:							
Sewell	55	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Droughty	1.00
						Large stones content	0.26

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
47F:							
Kaymine	30	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
						Gravel content	0.99
		Slope	1.00	Slope	1.00	Droughty	0.01
Rock outcrop	10	Not rated		Not rated		Not rated	
48E:							
Shelocta	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.31	Large stones content	0.31	Gravel content	0.32
Cedarcreek	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.31	Large stones content	0.31	Gravel content	0.97
						Droughty	0.88
49E:							
Shelocta	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.31	Large stones content	0.31	Gravel content	0.32
Highsplint	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.31	Large stones content	0.31	Large stones content	0.01
50F:							
Shelocta	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.31	Large stones content	0.31	Gravel content	0.32
Kaymine	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.31	Large stones content	0.31	Gravel content	0.99
						Droughty	0.01
51F:							
Stonecoal	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Droughty	1.00
		Large stones content	0.02	Large stones content	0.02	Gravel content	1.00
						Slope	1.00
52C:							
Tumbling	85	Not limited		Not limited		Somewhat limited	
						Slope	0.63
52D:							
Tumbling	80	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
53E:							
Tumbling	85	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Large stones content	0.94	Slope	1.00
		Large stones content	0.94	Slope	0.78		

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
54F:							
Udorthents----------	45	Not rated		Not rated		Not rated	
Urban land----------	30	Not rated		Not rated		Not rated	
55D:							
Wallen--------------	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Large stones content	0.47	Slope	1.00
		Large stones content	0.47			Droughty	0.99
						Depth to bedrock	0.90
55F:							
Wallen--------------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.47	Large stones content	0.47	Droughty	0.99
						Depth to bedrock	0.90
56D:							
Wallen--------------	65	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
						Droughty	0.99
		Slope	1.00			Depth to bedrock	0.90
Rock outcrop--------	25	Not rated		Not rated		Not rated	
56F:							
Wallen--------------	65	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
						Droughty	0.99
		Slope	1.00	Slope	1.00	Depth to bedrock	0.90
Rock outcrop--------	25	Not rated		Not rated		Not rated	
57C:							
Watahala------------	95	Not limited		Not limited		Somewhat limited	
						Gravel content	0.92
						Slope	0.63
						Droughty	0.01
57D:							
Watahala------------	95	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Gravel content	0.92
						Droughty	0.01
57E:							
Watahala------------	95	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.22	Slope	1.00
						Gravel content	0.92
						Droughty	0.01
57F:							
Watahala------------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.92
						Droughty	0.01

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
58D:							
Watahala	95	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	0.50			Gravel content	0.92
						Droughty	0.01
58E:							
Watahala	95	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
		Slope	1.00	Slope	0.22	Gravel content	0.92
						Droughty	0.01
59D:							
Wharton	45	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	0.32	Depth to saturated zone	0.27	Depth to saturated zone	0.64
		Depth to saturated zone	0.27				
Gilpin	40	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	0.50			Depth to bedrock	0.10
Berks	15	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	0.50			Depth to bedrock	0.16
						Droughty	0.09
60C:							
Wharton	45	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	0.64
		Depth to saturated zone	0.27	Depth to saturated zone	0.27	Slope	0.16
Gilpin	35	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Slope	0.16
						Depth to bedrock	0.10
Marrowbone	20	Not limited		Not limited		Somewhat limited	
						Droughty	0.75
						Depth to bedrock	0.20
						Slope	0.16
61B:							
Wyrick	55	Not limited		Not limited		Not limited	
Marbie	40	Not limited		Not limited		Somewhat limited	
						Depth to saturated zone	0.19
						Depth to cemented pan	0.06
61C:							
Wyrick	55	Not limited		Not limited		Somewhat limited	
						Slope	0.63

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
61C:							
Marbie	40	Not limited		Not limited		Somewhat limited	
						Slope	0.63
						Depth to saturated zone	0.19
						Depth to cemented pan	0.06
W:							
Water	100	Not rated		Not rated		Not rated	

Table 11.—Building Site Development, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
1E:							
Berks	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.01	Depth to hard bedrock	1.00	Depth to hard bedrock	0.01
Chiswell	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to soft bedrock	0.50	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
1F:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.01	Depth to hard bedrock	1.00	Depth to hard bedrock	0.01
Chiswell	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to soft bedrock	0.50	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
2D:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.01	Depth to hard bedrock	1.00	Depth to hard bedrock	0.01
Gilpin	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.35		
2E:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.01	Depth to hard bedrock	1.00	Depth to hard bedrock	0.01
Gilpin	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.35		
2F:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.01	Depth to hard bedrock	1.00	Depth to hard bedrock	0.01
Gilpin	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.35		

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
3C:							
Berks	55	Somewhat limited		Very limited		Very limited	
		Slope	0.63	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.01	Slope	0.63	Depth to hard bedrock	0.01
Groseclose	40	Very limited		Somewhat limited		Very limited	
		Shrink-swell	1.00	Slope	0.63	Slope	1.00
		Slope	0.63	Shrink-swell	0.50	Shrink-swell	1.00
3D:							
Berks	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.01	Depth to hard bedrock	1.00	Depth to hard bedrock	0.01
Groseclose	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Shrink-swell	0.50	Shrink-swell	1.00
4D:							
Berks	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.01	Depth to hard bedrock	1.00	Depth to hard bedrock	0.01
Poplimento	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Shrink-swell	0.50	Shrink-swell	1.00
5C:							
Berks	45	Somewhat limited		Very limited		Very limited	
		Slope	0.63	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.01	Slope	0.63	Depth to hard bedrock	0.01
Weikert	45	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to hard bedrock	1.00
5D:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.01	Depth to hard bedrock	1.00	Depth to hard bedrock	0.01
Weikert	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
5E:							
Berks	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.01	Depth to hard bedrock	1.00	Depth to hard bedrock	0.01

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
5E:							
Weikert	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
5F:							
Berks	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.01	Depth to hard bedrock	1.00	Depth to hard bedrock	0.01
Weikert	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
6E:							
Berks	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.01	Depth to hard bedrock	1.00	Depth to hard bedrock	0.01
Westmoreland	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to hard bedrock	0.13		
6F:							
Berks	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.01	Depth to hard bedrock	1.00	Depth to hard bedrock	0.01
Westmoreland	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to hard bedrock	0.13		
7E:							
Bland	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Depth to hard bedrock	1.00	Shrink-swell	0.50
		Depth to hard bedrock	0.06	Shrink-swell	0.50	Depth to hard bedrock	0.06
8D:							
Bland	80	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Shrink-swell	0.50	Slope	1.00	Shrink-swell	0.50
		Depth to hard bedrock	0.06	Shrink-swell	0.50	Depth to hard bedrock	0.06
Rock outcrop	15	Not rated		Not rated		Not rated	

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
8E:							
Bland	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Depth to hard bedrock	1.00	Shrink-swell	0.50
		Depth to hard bedrock	0.06	Shrink-swell	0.50	Depth to hard bedrock	0.06
Rock outcrop	15	Not rated		Not rated		Not rated	
9D:							
Bland	80	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Shrink-swell	0.50	Slope	1.00	Shrink-swell	0.50
		Depth to hard bedrock	0.06	Shrink-swell	0.50	Depth to hard bedrock	0.06
Rock outcrop	15	Not rated		Not rated		Not rated	
10D:							
Calvin	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.46	Depth to hard bedrock	1.00	Depth to hard bedrock	0.46
11F:							
Calvin	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.46	Depth to hard bedrock	1.00	Depth to hard bedrock	0.46
Rough	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
12C:							
Carbo	50	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Slope	1.00
		Slope	0.63	Depth to hard bedrock	1.00	Shrink-swell	1.00
		Depth to hard bedrock	0.54	Slope	0.63	Depth to hard bedrock	0.54
Beech Grove	30	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to hard bedrock	1.00
12D:							
Carbo	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Depth to hard bedrock	0.54	Depth to hard bedrock	1.00	Depth to hard bedrock	0.54
Beech Grove	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
12E:							
Carbo	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Depth to hard bedrock	0.54	Depth to hard bedrock	1.00	Depth to hard bedrock	0.54
Beech Grove	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
12F:							
Carbo	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Depth to hard bedrock	0.54	Depth to hard bedrock	1.00	Depth to hard bedrock	0.54
Beech Grove	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
13C:							
Carbo	35	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Depth to hard bedrock	0.54	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.01	Slope	0.01	Depth to hard bedrock	0.54
Frederick	34	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.01	Slope	0.01	Shrink-swell	0.50
Urban land	30	Not rated		Not rated		Not rated	
14D:							
Carbo	60	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Slope	1.00
		Slope	1.00	Depth to hard bedrock	1.00	Shrink-swell	1.00
		Depth to hard bedrock	0.54	Slope	1.00	Depth to hard bedrock	0.54
Rock outcrop	15	Not rated		Not rated		Not rated	
14E:							
Carbo	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Depth to hard bedrock	0.54	Depth to hard bedrock	1.00	Depth to hard bedrock	0.54
Rock outcrop	15	Not rated		Not rated		Not rated	

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
15D:							
Carbo	60	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Slope	1.00
		Slope	1.00	Depth to hard bedrock	1.00	Shrink-swell	1.00
		Depth to hard bedrock	0.54	Slope	1.00	Depth to hard bedrock	0.54
Rock outcrop	30	Not rated		Not rated		Not rated	
16C:							
Cedarcreek	35	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.01	Slope	0.01	Slope	1.00
Sewell	30	Somewhat limited		Somewhat limited		Very limited	
		Large stones content	0.10	Large stones content	0.10	Slope	1.00
		Slope	0.01	Slope	0.01	Large stones content	0.10
Rock outcrop	10	Not rated		Not rated		Not rated	
17A:							
Chagrin	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Depth to saturated zone	0.61		
18:							
Dumps, mine	85	Not rated		Not rated		Not rated	
Urban land	15	Not rated		Not rated		Not rated	
19C:							
Frederick	95	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
19D:							
Frederick	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
19E:							
Frederick	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
19F:							
Frederick	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
20C:							
Frederick	95	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
20D:							
Frederick	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
21C:							
Frederick-----------	95	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
21D:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
21E:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
21F:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
22C:							
Frederick-----------	95	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
22D:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
23D:							
Gilpin--------------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.35		
24D:							
Gilpin--------------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.01	Depth to hard bedrock	1.00	Depth to hard bedrock	0.01
				Depth to soft bedrock	0.10		
Berks---------------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.06	Depth to hard bedrock	1.00	Depth to hard bedrock	0.06
				Depth to soft bedrock	0.15		
24F:							
Gilpin--------------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.01	Depth to hard bedrock	1.00	Depth to hard bedrock	0.01
				Depth to soft bedrock	0.10		

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
24F:							
Berks	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.06	Depth to hard bedrock	1.00	Depth to hard bedrock	0.06
				Depth to soft bedrock	0.15		
25E:							
Gilpin	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.35		
Shelocta	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
26F:							
Gilpin	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.35		
Shelocta	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
27A:							
Grigsby	95	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Depth to saturated zone	0.18		
28C:							
Highsplint	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
		Large stones content	0.01	Large stones content	0.01	Large stones content	0.01
28D:							
Highsplint	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.01	Large stones content	0.01	Large stones content	0.01
29F:							
Highsplint	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.01	Large stones content	0.01	Large stones content	0.01
Shelocta	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
30A:							
Holly	97	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
31D:							
Kaymine	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Unstable fill	1.00	Unstable fill	1.00	Unstable fill	1.00
		Large stones content	0.03	Large stones content	0.03	Large stones content	0.03
32E:							
Kaymine	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Unstable fill	1.00	Unstable fill	1.00	Unstable fill	1.00
		Large stones content	0.03	Large stones content	0.03	Large stones content	0.03
Cedarcreek	15	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Unstable fill	1.00	Unstable fill	1.00	Unstable fill	1.00
33F:							
Kaymine	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Unstable fill	1.00	Unstable fill	1.00	Unstable fill	1.00
		Large stones content	0.03	Large stones content	0.03	Large stones content	0.03
Fiveblock	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Unstable fill	1.00	Unstable fill	1.00	Unstable fill	1.00
		Large stones content	0.05	Large stones content	0.05	Large stones content	0.05
34C:							
Kaymine	55	Very limited		Very limited		Very limited	
		Unstable fill	1.00	Unstable fill	1.00	Unstable fill	1.00
		Large stones content	0.03	Large stones content	0.03	Slope	1.00
		Slope	0.01	Slope	0.01	Large stones content	0.03
Fiveblock	25	Very limited		Very limited		Very limited	
		Unstable fill	1.00	Unstable fill	1.00	Unstable fill	1.00
		Large stones content	0.05	Large stones content	0.05	Slope	1.00
		Slope	0.01	Slope	0.01	Large stones content	0.05
Cedarcreek	20	Very limited		Very limited		Very limited	
		Unstable fill	1.00	Unstable fill	1.00	Unstable fill	1.00
		Slope	0.01	Slope	0.01	Slope	1.00
35C:							
Lily	90	Somewhat limited		Very limited		Very limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to hard bedrock	0.64
35D:							
Lily	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to hard bedrock	0.64

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
35E:							
Lily	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to hard bedrock	0.64
36A:							
Lobdell	65	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	0.39	Depth to saturated zone	1.00	Depth to saturated zone	0.39
Orrville	30	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
37D:							
Mandy	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.03		
Paddyknob	40	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.79	Slope	1.00	Depth to hard bedrock	0.79
Rock outcrop	10	Not rated		Not rated		Not rated	
38D:							
Marrowbone	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to hard bedrock	0.84		
				Depth to soft bedrock	0.20		
38E:							
Marrowbone	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to hard bedrock	0.84		
				Depth to soft bedrock	0.20		
38F:							
Marrowbone	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to hard bedrock	0.84		
				Depth to soft bedrock	0.20		
39D:							
Marrowbone	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to hard bedrock	0.84		
				Depth to soft bedrock	0.20		

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
39D:							
Gilpin	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.01	Depth to hard bedrock	1.00	Depth to hard bedrock	0.01
				Depth to soft bedrock	0.10		
39E:							
Marrowbone	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to hard bedrock	0.84		
				Depth to soft bedrock	0.20		
Gilpin	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.01	Depth to hard bedrock	1.00	Depth to hard bedrock	0.01
				Depth to soft bedrock	0.10		
39F:							
Marrowbone	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to hard bedrock	0.84		
				Depth to soft bedrock	0.20		
Gilpin	15	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.01	Depth to hard bedrock	1.00	Depth to hard bedrock	0.01
				Depth to soft bedrock	0.10		
40F:							
Matewan	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.01	Depth to hard bedrock	1.00	Depth to hard bedrock	0.01
Rock outcrop	40	Not rated		Not rated		Not rated	
41A:							
Ogles	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Large stones content	1.00	Large stones content	1.00	Large stones content	1.00
				Depth to saturated zone	0.82		
42C:							
Oriskany	75	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
		Large stones content	0.01	Large stones content	0.01	Large stones content	0.01

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
42D:							
Oriskany------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.01	Large stones content	0.01	Large stones content	0.01
42E:							
Oriskany------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.01	Large stones content	0.01	Large stones content	0.01
43:							
Pits, quarry--------	95	Not rated		Not rated		Not rated	
44C:							
Poplimento----------	45	Very limited		Somewhat limited		Very limited	
		Shrink-swell	1.00	Slope	0.63	Slope	1.00
		Slope	0.63	Shrink-swell	0.50	Shrink-swell	1.00
Westmoreland--------	40	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
				Depth to hard bedrock	0.13		
45F:							
Ramsey--------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Rock outcrop--------	15	Not rated		Not rated		Not rated	
46F:							
Rock outcrop--------	45	Not rated		Not rated		Not rated	
Beech Grove---------	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Benthole------------	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.49	Large stones content	0.49	Large stones content	0.49
47F:							
Sewell--------------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.10	Large stones content	0.10	Large stones content	0.10
Kaymine-------------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.03	Large stones content	0.03	Large stones content	0.03
Rock outcrop--------	10	Not rated		Not rated		Not rated	

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
48E:							
Shelocta------------	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Cedarcreek----------	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Unstable fill	1.00	Unstable fill	1.00	Unstable fill	1.00
49E:							
Shelocta------------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Highsplint----------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.01	Large stones content	0.01	Large stones content	0.01
50F:							
Shelocta------------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Kaymine-------------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Unstable fill	1.00	Unstable fill	1.00	Unstable fill	1.00
		Large stones content	0.03	Large stones content	0.03	Large stones content	0.03
51F:							
Stonecoal-----------	85	Very limited		Very limited		Very limited	
		Unstable fill	1.00	Unstable fill	1.00	Unstable fill	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.08	Large stones content	0.08	Large stones content	0.08
52C:							
Tumbling------------	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
52D:							
Tumbling------------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
53E:							
Tumbling------------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
54F:							
Udorthents----------	45	Not rated		Not rated		Not rated	
Urban land----------	30	Not rated		Not rated		Not rated	
55D:							
Wallen--------------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.90	Depth to hard bedrock	1.00	Depth to hard bedrock	0.90

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
55F:							
Wallen	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.90	Depth to hard bedrock	1.00	Depth to hard bedrock	0.90
56D:							
Wallen	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.90	Depth to hard bedrock	1.00	Depth to hard bedrock	0.90
Rock outcrop	25	Not rated		Not rated		Not rated	
56F:							
Wallen	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.90	Depth to hard bedrock	1.00	Depth to hard bedrock	0.90
Rock outcrop	25	Not rated		Not rated		Not rated	
57C:							
Watahala	95	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
57D:							
Watahala	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
57E:							
Watahala	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
57F:							
Watahala	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
58D:							
Watahala	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
58E:							
Watahala	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
59D:							
Wharton	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.93	Depth to saturated zone	1.00	Depth to saturated zone	0.93
Gilpin	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.01	Depth to hard bedrock	1.00	Depth to hard bedrock	0.01
				Depth to soft bedrock	0.10		

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
59D:							
Berks	15	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.06	Depth to hard bedrock	1.00	Depth to hard bedrock	0.06
				Depth to soft bedrock	0.15		
60C:							
Wharton	45	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.93	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.16	Slope	0.16	Depth to saturated zone	0.93
Gilpin	35	Somewhat limited		Very limited		Very limited	
		Slope	0.16	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.01	Slope	0.16	Depth to hard bedrock	0.01
				Depth to soft bedrock	0.10		
Marrowbone	20	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.16	Depth to hard bedrock	0.84	Slope	1.00
				Depth to soft bedrock	0.20		
				Slope	0.16		
61B:							
Wyrick	55	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.22	Shrink-swell	0.22	Slope	0.50
						Shrink-swell	0.22
Marbie	40	Somewhat limited		Very limited		Somewhat limited	
		Shrink-swell	0.50	Depth to saturated zone	1.00	Slope	0.50
		Depth to saturated zone	0.39	Depth to thick cemented pan	1.00	Shrink-swell	0.50
		Depth to thick cemented pan	0.06	Shrink-swell	0.50	Depth to saturated zone	0.39
61C:							
Wyrick	55	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
		Shrink-swell	0.22	Shrink-swell	0.22	Shrink-swell	0.22
Marbie	40	Somewhat limited		Very limited		Very limited	
		Slope	0.63	Depth to saturated zone	1.00	Slope	1.00
		Shrink-swell	0.50	Depth to thick cemented pan	1.00	Shrink-swell	0.50
		Depth to saturated zone	0.30			Depth to saturated zone	0.39
			0.39	Slope	0.63		
W:							
Water	100	Not rated		Not rated		Not rated	

Table 11.—Building Site Development, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1E:							
Berks	50	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Droughty	0.04
		Depth to hard bedrock	0.01	Cutbanks cave	0.10	Gravel content	0.03
Chiswell	40	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Depth to soft bedrock	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Droughty	1.00
1F:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Droughty	0.04
		Depth to hard bedrock	0.01	Cutbanks cave	0.10	Gravel content	0.03
Chiswell	45	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Depth to soft bedrock	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Droughty	1.00
2D:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Droughty	0.04
		Depth to hard bedrock	0.01	Cutbanks cave	0.10	Gravel content	0.03
Gilpin	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Depth to soft bedrock	0.35	Depth to bedrock	0.35
		Low strength	0.22	Cutbanks cave	0.10		
2E:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Droughty	0.04
		Depth to hard bedrock	0.01	Cutbanks cave	0.10	Gravel content	0.03
Gilpin	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Depth to soft bedrock	0.35	Depth to bedrock	0.35
		Low strength	0.22	Cutbanks cave	0.10		

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
2F:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Droughty	0.04
		Depth to hard bedrock	0.01	Cutbanks cave	0.10	Gravel content	0.03
Gilpin	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Depth to soft bedrock	0.35	Depth to bedrock	0.35
		Low strength	0.22	Cutbanks cave	0.10		
3C:							
Berks	55	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.63	Depth to hard bedrock	1.00	Slope	0.63
		Frost action	0.50	Slope	0.63	Droughty	0.04
		Depth to hard bedrock	0.01	Cutbanks cave	0.10	Gravel content	0.03
Groseclose	40	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Slope	0.63	Slope	0.63
		Shrink-swell	1.00	Cutbanks cave	0.10		
		Slope	0.63				
3D:							
Berks	55	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Droughty	0.04
		Depth to hard bedrock	0.01	Cutbanks cave	0.10	Gravel content	0.03
Groseclose	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	1.00				
4D:							
Berks	50	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Droughty	0.04
		Depth to hard bedrock	0.01	Cutbanks cave	0.10	Gravel content	0.03
Poplimento	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Too clayey	0.12		
		Low strength	1.00	Cutbanks cave	0.10		
5C:							
Berks	45	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.63	Depth to hard bedrock	1.00	Slope	0.63
		Frost action	0.50	Slope	0.63	Droughty	0.04
		Depth to hard bedrock	0.01	Cutbanks cave	0.10	Gravel content	0.03

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
5C:							
Weikert	45	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Droughty	1.00
		Slope	0.63	Slope	0.63	Slope	0.63
		Frost action	0.50	Cutbanks cave	0.10		
5D:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50			Droughty	0.04
		Depth to hard bedrock	0.01	Slope	1.00	Gravel content	0.03
				Cutbanks cave	0.10		
Weikert	45	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Slope	1.00
		Slope	1.00	Slope	1.00	Droughty	1.00
		Frost action	0.50	Cutbanks cave	0.10		
5E:							
Berks	65	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action				Droughty	0.04
		Depth to hard	0.50	Slope	1.00	Gravel content	0.03
		bedrock	0.01	Cutbanks cave	0.10		
Weikert	25	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Slope	1.00
		Slope	1.00	Slope	1.00	Droughty	1.00
		Frost action	0.50	Cutbanks cave	0.10		
5F:							
Berks	60	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50			Droughty	0.04
		Depth to hard bedrock	0.01	Slope	1.00	Gravel content	0.03
				Cutbanks cave	0.10		
Weikert	30	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Slope	1.00
		Slope	1.00	Slope	1.00	Droughty	1.00
		Frost action	0.50	Cutbanks cave	0.10		
6E:							
Berks	55	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50			Droughty	0.04
		Depth to hard bedrock	0.01	Slope	1.00	Gravel content	0.03
				Cutbanks cave	0.10		
Westmoreland	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	0.78	Depth to hard bedrock	0.13		
		Frost action	0.50				
				Cutbanks cave	0.10		

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
6F:							
Berks	65	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Droughty	0.04
		Depth to hard bedrock	0.01	Cutbanks cave	0.10	Gravel content	0.03
Westmoreland	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	0.78	Depth to hard bedrock	0.13		
		Frost action	0.50	Cutbanks cave	0.10		
7E:							
Bland	85	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Low strength	1.00	Slope	1.00	Depth to bedrock	0.06
		Shrink-swell	0.50	Too clayey	0.72		
8D:							
Bland	80	Very limited		Very limited		Very limited	
		Low strength	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Depth to bedrock	0.06
		Shrink-swell	0.50	Too clayey	0.72		
Rock outcrop	15	Not rated		Not rated		Not rated	
8E:							
Bland	80	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Low strength	1.00	Slope	1.00	Depth to bedrock	0.06
		Shrink-swell	0.50	Too clayey	0.72		
Rock outcrop	15	Not rated		Not rated		Not rated	
9D:							
Bland	80	Very limited		Very limited		Very limited	
		Low strength	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Depth to bedrock	0.06
		Shrink-swell	0.50	Too clayey	0.72		
Rock outcrop	15	Not rated		Not rated		Not rated	
10D:							
Calvin	85	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Depth to bedrock	0.46
		Depth to hard bedrock	0.46	Cutbanks cave	0.10	Droughty	0.02
11F:							
Calvin	70	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Depth to bedrock	0.46
		Depth to hard bedrock	0.46	Cutbanks cave	0.10	Droughty	0.02

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
11F:							
Rough	20	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Droughty	1.00
12C:							
Carbo	50	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Depth to hard bedrock	1.00	Slope	0.63
		Shrink-swell	1.00	Too clayey	1.00	Depth to bedrock	0.54
		Slope	0.63	Slope	0.63	Droughty	0.06
Beech Grove	30	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	0.63	Slope	0.63	Droughty	1.00
		Frost action	0.50			Slope	0.63
12D:							
Carbo	60	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Low strength	1.00	Slope	1.00	Depth to bedrock	0.54
		Shrink-swell	1.00	Too clayey	1.00	Droughty	0.06
Beech Grove	30	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50			Droughty	1.00
12E:							
Carbo	60	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Low strength	1.00	Slope	1.00	Depth to bedrock	0.54
		Shrink-swell	1.00	Too clayey	1.00	Droughty	0.06
Beech Grove	30	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50			Droughty	1.00
12F:							
Carbo	60	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Low strength	1.00	Slope	1.00	Depth to bedrock	0.54
		Shrink-swell	1.00	Too clayey	1.00	Droughty	0.06
Beech Grove	30	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50			Droughty	1.00

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
13C:							
Carbo	35	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Depth to hard bedrock	1.00	Depth to bedrock	0.54
		Shrink-swell	1.00	Too clayey	1.00	Droughty	0.06
		Depth to hard bedrock	0.54	Cutbanks cave	0.10	Slope	0.01
Frederick	34	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.98	Slope	0.01
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Frost action	0.50	Slope	0.01		
Urban land	30	Not rated		Not rated		Not rated	
14D:							
Carbo	60	Very limited		Very limited		Very limited	
		Low strength	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Shrink-swell	1.00	Too clayey	1.00	Depth to bedrock	0.54
		Slope	1.00	Slope	1.00	Droughty	0.06
Rock outcrop	15	Not rated		Not rated		Not rated	
14E:							
Carbo	80	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Low strength	1.00	Slope	1.00	Depth to bedrock	0.54
		Shrink-swell	1.00	Too clayey	1.00	Droughty	0.06
Rock outcrop	15	Not rated		Not rated		Not rated	
15D:							
Carbo	60	Very limited		Very limited		Very limited	
		Low strength	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Shrink-swell	1.00	Too clayey	1.00	Depth to bedrock	0.54
		Slope	1.00	Slope	1.00	Droughty	0.06
Rock outcrop	30	Not rated		Not rated		Not rated	
16C:							
Cedarcreek	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	0.97
		Slope	0.01	Slope	0.01	Droughty	0.88
						Large stones content	0.38
Sewell	30	Somewhat limited		Somewhat limited		Very limited	
		Frost action	0.50	Cutbanks cave	0.10	Droughty	1.00
		Large stones content	0.10	Large stones content	0.10	Large stones content	0.26
		Slope	0.01	Slope	0.01	Gravel content	0.08
Rock outcrop	10	Not rated		Not rated		Not rated	

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
17A:							
Chagrin-------------	90	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Depth to saturated zone	0.61	Flooding	0.60
		Frost action	0.50	Flooding	0.60		
				Cutbanks cave	0.10		
18:							
Dumps, mine---------	85	Not rated		Not rated		Not rated	
Urban land----------	15	Not rated		Not rated		Not rated	
19C:							
Frederick-----------	95	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.98	Slope	0.63
		Slope	0.63	Slope	0.63		
		Shrink-swell	0.50	Cutbanks cave	0.10		
19D:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Too clayey	0.98		
		Shrink-swell	0.50	Cutbanks cave	0.10		
19E:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Too clayey	0.98		
		Shrink-swell	0.50	Cutbanks cave	0.10		
19F:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Too clayey	0.98		
		Shrink-swell	0.50	Cutbanks cave	0.10		
20C:							
Frederick-----------	95	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.98	Slope	0.63
		Slope	0.63	Slope	0.63		
		Shrink-swell	0.50	Cutbanks cave	0.10		
20D:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Too clayey	0.98		
		Shrink-swell	0.50	Cutbanks cave	0.10		
21C:							
Frederick-----------	95	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.98	Slope	0.63
		Slope	0.63	Slope	0.63	Gravel content	0.08
		Shrink-swell	0.50	Cutbanks cave	0.10		
21D:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Too clayey	0.98	Gravel content	0.08
		Shrink-swell	0.50	Cutbanks cave	0.10		

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
21E:							
Frederick	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Too clayey	0.98	Gravel content	0.08
		Shrink-swell	0.50	Cutbanks cave	0.10		
21F:							
Frederick	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Too clayey	0.98	Gravel content	0.08
		Shrink-swell	0.50	Cutbanks cave	0.10		
22C:							
Frederick	95	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.98	Slope	0.63
		Slope	0.63	Slope	0.63	Gravel content	0.08
		Shrink-swell	0.50	Cutbanks cave	0.10		
22D:							
Frederick	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Too clayey	0.98	Gravel content	0.08
		Shrink-swell	0.50	Cutbanks cave	0.10		
23D:							
Gilpin	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Depth to soft bedrock	0.35	Depth to bedrock	0.35
		Low strength	0.22	Cutbanks cave	0.10		
24D:							
Gilpin	55	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Depth to bedrock	0.10
		Depth to hard bedrock	0.01	Cutbanks cave	1.00		
Berks	30	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Depth to bedrock	0.16
		Depth to hard bedrock	0.06	Depth to soft bedrock	0.15	Droughty	0.09
24F:							
Gilpin	55	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Depth to bedrock	0.10
		Depth to hard bedrock	0.01	Cutbanks cave	1.00		
Berks	35	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Depth to bedrock	0.16
		Depth to hard bedrock	0.06	Depth to soft bedrock	0.15	Droughty	0.09

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
25E:							
Gilpin	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Depth to soft bedrock	0.35	Depth to bedrock	0.35
		Low strength	0.22	Cutbanks cave	0.10		
Shelocta	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00		
				Too clayey	0.88		
26F:							
Gilpin	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Depth to soft bedrock	0.35	Depth to bedrock	0.35
		Low strength	0.22	Cutbanks cave	0.10		
Shelocta	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00		
				Too clayey	0.88		
27A:							
Grigsby	95	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Flooding	0.60	Flooding	0.60
				Depth to saturated zone	0.18		
				Cutbanks cave	0.10		
28C:							
Highsplint	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Frost action	0.50	Slope	0.37	Slope	0.37
		Slope	0.37	Cutbanks cave	0.10	Large stones content	0.01
		Large stones content	0.01	Large stones content	0.01		
28D:							
Highsplint	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Large stones content	0.01
		Large stones content	0.01	Large stones content	0.01		
29F:							
Highsplint	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Large stones content	0.01
		Large stones content	0.01	Large stones content	0.01		
Shelocta	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.32

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
30A:							
Holly	97	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Flooding	0.60	Flooding	0.60
31D:							
Kaymine	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Unstable fill	1.00	Cutbanks cave	0.10	Gravel content	0.99
		Frost action	0.50	Large stones content	0.03	Droughty	0.01
32E:							
Kaymine	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Unstable fill	1.00	Cutbanks cave	0.10	Gravel content	0.99
		Frost action	0.50	Large stones content	0.03	Droughty	0.01
Cedarcreek	15	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Unstable fill	1.00	Cutbanks cave	0.10	Gravel content	0.97
		Frost action	0.50			Droughty	0.88
33F:							
Kaymine	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Unstable fill	1.00	Cutbanks cave	0.10	Gravel content	0.99
		Frost action	0.50	Large stones content	0.03	Droughty	0.01
Fiveblock	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Unstable fill	1.00	Cutbanks cave	0.10	Droughty	0.99
		Frost action	0.50	Large stones content	0.05	Gravel content	0.94
34C:							
Kaymine	55	Very limited		Somewhat limited		Somewhat limited	
		Unstable fill	1.00	Cutbanks cave	0.10	Gravel content	0.99
		Frost action	0.50	Large stones content	0.03	Droughty	0.01
		Large stones content	0.03	Slope	0.01	Slope	0.01
Fiveblock	25	Very limited		Somewhat limited		Somewhat limited	
		Unstable fill	1.00	Cutbanks cave	0.10	Droughty	0.99
		Frost action	0.50	Large stones content	0.05	Gravel content	0.94
		Large stones content	0.05	Slope	0.01	Large stones content	0.46
Cedarcreek	20	Very limited		Somewhat limited		Somewhat limited	
		Unstable fill	1.00	Cutbanks cave	0.10	Gravel content	0.97
		Frost action	0.50	Slope	0.01	Droughty	0.88
		Slope	0.01			Large stones content	0.38

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
35C:							
Lily	90	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to bedrock	0.65
		Slope	0.63	Slope	0.63	Slope	0.63
		Frost action	0.50	Cutbanks cave	0.10		
35D:							
Lily	90	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Slope	1.00	Depth to bedrock	0.65
		Frost action	0.50	Cutbanks cave	0.10		
35E:							
Lily	90	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Slope	1.00	Depth to bedrock	0.65
		Frost action	0.50	Cutbanks cave	0.10		
36A:							
Lobdell	65	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Flooding	0.60
		Flooding	1.00	Flooding	0.60	Depth to saturated zone	0.19
		Depth to saturated zone	0.19	Cutbanks cave	0.10		
Orrville	30	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Flooding	0.60	Flooding	0.60
		Flooding	1.00	Cutbanks cave	0.10		
37D:							
Mandy	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Depth to bedrock	0.03
				Depth to soft bedrock	0.03		
Paddyknob	40	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.79	Slope	1.00	Droughty	0.99
		Frost action	0.50	Cutbanks cave	0.10	Depth to bedrock	0.80
Rock outcrop	10	Not rated		Not rated		Not rated	
38D:							
Marrowbone	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	1.00	Droughty	0.75
				Depth to hard bedrock	0.84	Depth to bedrock	0.20

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
38E:							
Marrowbone----------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	1.00	Droughty	0.75
				Depth to hard bedrock	0.84	Depth to bedrock	0.20
38F:							
Marrowbone----------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	1.00	Droughty	0.75
				Depth to hard bedrock	0.84	Depth to bedrock	0.20
39D:							
Marrowbone----------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	1.00	Droughty	0.75
				Depth to hard bedrock	0.84	Depth to bedrock	0.20
Gilpin-------------	45	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50			Depth to bedrock	0.10
		Depth to hard bedrock	0.01	Slope	1.00		
				Cutbanks cave	1.00		
39E:							
Marrowbone----------	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	1.00	Droughty	0.75
				Depth to hard bedrock	0.84	Depth to bedrock	0.20
Gilpin-------------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50			Depth to bedrock	0.10
		Depth to hard bedrock	0.01	Slope	1.00		
				Cutbanks cave	1.00		
39F:							
Marrowbone----------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	1.00	Droughty	0.75
				Depth to hard bedrock	0.84	Depth to bedrock	0.20
Gilpin-------------	15	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50			Depth to bedrock	0.10
		Depth to hard bedrock	0.01	Slope	1.00		
				Cutbanks cave	1.00		
40F:							
Matewan------------	45	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.01			Large stones content	0.54
				Slope	1.00		
				Cutbanks cave	1.00	Droughty	0.41
Rock outcrop--------	40	Not rated		Not rated		Not rated	

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
41A:							
Ogles	90	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Large stones content	1.00
		Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
		Frost action	0.50	Depth to saturated zone	0.82		
42C:							
Oriskany	75	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.63	Slope	0.63	Large stones content	0.92
		Frost action	0.50	Cutbanks cave	0.10	Slope	0.63
		Large stones content	0.01	Large stones content	0.01	Gravel content	0.11
42D:							
Oriskany	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Large stones content	0.92
		Large stones content	0.01	Large stones content	0.01	Gravel content	0.11
42E:							
Oriskany	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Large stones content	0.92
		Large stones content	0.01	Large stones content	0.01	Gravel content	0.11
43:							
Pits, quarry	95	Not rated		Not rated		Not rated	
44C:							
Poplimento	45	Very limited		Somewhat limited		Somewhat limited	
		Shrink-swell	1.00	Slope	0.63	Slope	0.63
		Low strength	1.00	Too clayey	0.12		
		Slope	0.63	Cutbanks cave	0.10		
Westmoreland	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Low strength	0.78	Slope	0.63	Slope	0.63
		Slope	0.63	Depth to hard bedrock	0.13		
		Frost action	0.50	Cutbanks cave	0.10		
45F:							
Ramsey	75	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Droughty	1.00
Rock outcrop	15	Not rated		Not rated		Not rated	
46F:							
Rock outcrop	45	Not rated		Not rated		Not rated	
Beech Grove	25	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50			Droughty	1.00

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
46F:							
Benthole------------	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Large stones content	0.49	Gravel content	0.16
		Large stones content	0.49	Cutbanks cave	0.10		
47F:							
Sewell--------------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Droughty	1.00
		Large stones content	0.10	Large stones content	0.10	Large stones content	0.26
Kaymine-------------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	0.99
		Large stones content	0.03	Large stones content	0.03	Droughty	0.01
Rock outcrop--------	10	Not rated		Not rated		Not rated	
48E:							
Shelocta------------	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.32
Cedarcreek----------	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Unstable fill	1.00	Cutbanks cave	0.10	Gravel content	0.97
		Frost action	0.50			Droughty	0.88
49E:							
Shelocta------------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.32
Highsplint----------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Large stones content	0.01
		Large stones content	0.01	Large stones content	0.01		
50F:							
Shelocta------------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.32
Kaymine-------------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Unstable fill	1.00	Cutbanks cave	0.10	Gravel content	0.99
		Frost action	0.50	Large stones content	0.03	Droughty	0.01
51F:							
Stonecoal-----------	85	Very limited		Very limited		Very limited	
		Unstable fill	1.00	Cutbanks cave	1.00	Droughty	1.00
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Frost action	0.50	Large stones content	0.08	Slope	1.00

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
52C:							
Tumbling	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.63	Slope	0.63	Slope	0.63
		Frost action	0.50	Cutbanks cave	0.10		
		Low strength	0.10	Too clayey	0.03		
52D:							
Tumbling	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10		
		Low strength	0.10	Too clayey	0.03		
53E:							
Tumbling	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10		
		Low strength	0.10	Too clayey	0.03		
54F:							
Udorthents	45	Not rated		Not rated		Not rated	
Urban land	30	Not rated		Not rated		Not rated	
55D:							
Wallen	90	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.90	Slope	1.00	Droughty	0.99
				Cutbanks cave	0.10	Depth to bedrock	0.90
55F:							
Wallen	90	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.90	Slope	1.00	Droughty	0.99
				Cutbanks cave	0.10	Depth to bedrock	0.90
56D:							
Wallen	65	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.90	Slope	1.00	Droughty	0.99
				Cutbanks cave	0.10	Depth to bedrock	0.90
Rock outcrop	25	Not rated		Not rated		Not rated	
56F:							
Wallen	65	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.90	Slope	1.00	Droughty	0.99
				Cutbanks cave	0.10	Depth to bedrock	0.90
Rock outcrop	25	Not rated		Not rated		Not rated	
57C:							
Watahala	95	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.63	Cutbanks cave	1.00	Gravel content	0.92
		Frost action	0.50	Too clayey	0.98	Slope	0.63
				Slope	0.63	Droughty	0.01

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
57D:							
Watahala	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.92
				Too clayey	0.98	Droughty	0.01
57E:							
Watahala	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.92
				Too clayey	0.98	Droughty	0.01
57F:							
Watahala	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.92
				Too clayey	0.98	Droughty	0.01
58D:							
Watahala	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.92
				Too clayey	0.98	Droughty	0.01
58E:							
Watahala	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.92
				Too clayey	0.98	Droughty	0.01
59D:							
Wharton	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.64
		Low strength	1.00	Cutbanks cave	0.10		
Gilpin	40	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Depth to bedrock	0.10
		Depth to hard bedrock	0.01	Cutbanks cave	1.00		
Berks	15	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Depth to bedrock	0.16
		Depth to hard bedrock	0.06	Depth to soft bedrock	0.15	Droughty	0.09
60C:							
Wharton	45	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.64
		Low strength	1.00	Slope	0.16	Slope	0.16
		Depth to saturated zone	0.64	Cutbanks cave	0.10		

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
60C:							
Gilpin	35	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Depth to hard bedrock	1.00	Slope	0.16
		Slope	0.16	Cutbanks cave	1.00	Depth to bedrock	0.10
		Depth to hard bedrock	0.01	Slope	0.16		
Marrowbone	20	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.16	Cutbanks cave	1.00	Droughty	0.75
				Depth to hard bedrock	0.84	Depth to bedrock	0.20
				Depth to soft bedrock	0.20	Slope	0.16
61B:							
Wyrick	55	Somewhat limited		Somewhat limited		Not limited	
		Low strength	0.78	Cutbanks cave	0.10		
		Frost action	0.50				
		Shrink-swell	0.22				
Marbie	40	Somewhat limited		Very limited		Somewhat limited	
		Shrink-swell	0.50	Depth to thick cemented pan	1.00	Depth to saturated zone	0.19
		Frost action	0.50	Depth to saturated zone	1.00	Depth to cemented pan	0.06
		Low strength	0.22	Too clayey	0.12		
61C:							
Wyrick	55	Somewhat limited		Somewhat limited		Somewhat limited	
		Low strength	0.78	Slope	0.63	Slope	0.63
		Slope	0.63	Cutbanks cave	0.10		
		Frost action	0.50				
Marbie	40	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.63	Depth to thick cemented pan	1.00	Slope	0.63
		Shrink-swell	0.50	Depth to saturated zone	1.00	Depth to saturated zone	0.19
		Frost action	0.50	Slope	0.63	Depth to cemented pan	0.06
W:							
Water	100	Not rated		Not rated		Not rated	

Table 12.—Sanitary Facilities, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
1E:					
Berks	50	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Chiswell	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
				Seepage	0.50
1F:					
Berks	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Chiswell	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
				Seepage	0.50
2D:					
Berks	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Gilpin	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
2E:					
Berks	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Gilpin	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
2F:					
Berks	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Gilpin	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
3C:					
Berks	55	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Seepage, bottom layer	1.00	Slope	1.00
		Slope	0.63	Seepage	1.00
Groseclose	40	Very limited		Very limited	
		Slow water movement	1.00	Slope	1.00
		Slope	0.63		
3D:					
Berks	55	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Groseclose	40	Very limited		Very limited	
		Slow water movement	1.00	Slope	1.00
		Slope	1.00		
4D:					
Berks	50	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Poplimento	40	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	1.00		
5C:					
Berks	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Seepage, bottom layer	1.00	Slope	1.00
		Slope	0.63	Seepage	1.00
Weikert	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Seepage, bottom layer	1.00	Slope	1.00
		Slope	0.63	Seepage	1.00

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
5D:					
Berks	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Weikert	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
5E:					
Berks	65	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Weikert	25	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
5F:					
Berks	60	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Weikert	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
6E:					
Berks	55	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Westmoreland	35	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Depth to bedrock	0.59	Seepage	0.50
		Slow water movement	0.50	Depth to hard bedrock	0.13
6F:					
Berks	65	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
6F:					
Westmoreland--------	30	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Depth to bedrock	0.59	Seepage	0.50
		Slow water movement	0.50	Depth to hard bedrock	0.13
7E:					
Bland---------------	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Slow water movement	1.00		
8D:					
Bland---------------	80	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slow water movement	1.00	Slope	1.00
		Slope	1.00		
Rock outcrop--------	15	Not rated		Not rated	
8E:					
Bland---------------	80	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Slow water movement	1.00		
Rock outcrop--------	15	Not rated		Not rated	
9D:					
Bland---------------	80	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slow water movement	1.00	Slope	1.00
		Slope	1.00		
Rock outcrop--------	15	Not rated		Not rated	
10D:					
Calvin--------------	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
11F:					
Calvin--------------	70	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Rough---------------	20	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00		

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
12C:					
Carbo	50	Very limited		Very limited	
		Slow water movement	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	0.63		
Beech Grove	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.63	Slope	1.00
12D:					
Carbo	60	Very limited		Very limited	
		Slow water movement	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	1.00		
Beech Grove	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
12E:					
Carbo	60	Very limited		Very limited	
		Slow water movement	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	1.00		
Beech Grove	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
12F:					
Carbo	60	Very limited		Very limited	
		Slow water movement	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	1.00		
Beech Grove	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
13C:					
Carbo	35	Very limited		Very limited	
		Slow water movement	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	0.01		
Frederick	34	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
		Slope	0.01	Seepage	0.50
Urban land	30	Not rated		Not rated	

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
14D:					
Carbo	60	Very limited		Very limited	
		Slow water movement	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	1.00		
Rock outcrop	15	Not rated		Not rated	
14E:					
Carbo	80	Very limited		Very limited	
		Slow water movement	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	1.00		
Rock outcrop	15	Not rated		Not rated	
15D:					
Carbo	60	Very limited		Very limited	
		Slow water movement	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	1.00		
Rock outcrop	30	Not rated		Not rated	
16C:					
Cedarcreek	35	Somewhat limited		Very limited	
		Slow water movement	0.68	Slope	1.00
				Seepage	0.32
		Slope	0.01		
Sewell	30	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
				Slope	1.00
		Large stones content	0.10	Large stones content	0.58
		Slope	0.01		
Rock outcrop	10	Not rated		Not rated	
17A:					
Chagrin	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	0.99	Depth to saturated zone	0.71
		Slow water movement	0.50	Seepage	0.50
18:					
Dumps, mine	85	Not rated		Not rated	
Urban land	15	Not rated		Not rated	
19C:					
Frederick	95	Somewhat limited		Very limited	
		Slope	0.63	Slope	1.00
		Slow water movement	0.50	Seepage	0.50

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
19D:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
19E:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
19F:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
20C:					
Frederick-----------	95	Somewhat limited		Very limited	
		Slope	0.63	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
20D:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
21C:					
Frederick-----------	95	Somewhat limited		Very limited	
		Slope	0.63	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
21D:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
21E:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
21F:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
22C:					
Frederick-----------	95	Somewhat limited		Very limited	
		Slope	0.63	Slope	1.00
		Slow water movement	0.50	Seepage	0.50

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
22D:					
Frederick-----------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
23D:					
Gilpin--------------	90	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
24D:					
Gilpin--------------	55	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Depth to soft bedrock	1.00
		Slow water movement	0.50	Slope	1.00
Berks---------------	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Depth to soft bedrock	1.00
		Seepage, bottom layer	1.00	Slope	1.00
24F:					
Gilpin--------------	55	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Depth to soft bedrock	1.00
		Slow water movement	0.50	Slope	1.00
Berks---------------	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Depth to soft bedrock	1.00
		Seepage, bottom layer	1.00	Slope	1.00
25E:					
Gilpin--------------	65	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
Shelocta------------	30	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
26F:					
Gilpin--------------	60	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
26F:					
Shelocta	35	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
27A:					
Grigsby	95	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
		Depth to saturated zone	0.50		
28C:					
Highsplint	90	Very limited		Very limited	
		Seepage, bottom layer	1.00	Slope	1.00
				Seepage	1.00
		Slope	0.37	Large stones content	0.17
		Large stones content	0.01		
28D:					
Highsplint	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
				Large stones content	0.17
		Large stones content	0.01		
29F:					
Highsplint	55	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
				Large stones content	0.17
		Large stones content	0.01		
Shelocta	40	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.54
30A:					
Holly	97	Very limited		Very limited	
		Flooding	1.00	Ponding	1.00
		Ponding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
31D:					
Kaymine	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Unstable fill	1.00	Seepage	0.32
		Slow water movement	0.68		

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
32E:					
Kaymine	85	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Unstable fill	1.00	Seepage	0.32
		Slow water movement	0.68		
Cedarcreek	15	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Unstable fill	1.00	Seepage	0.32
		Slow water movement	0.68		
33F:					
Kaymine	50	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Unstable fill	1.00	Seepage	0.32
		Slow water movement	0.68		
Fiveblock	45	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Unstable fill	1.00	Seepage	1.00
		Seepage, bottom layer	1.00	Large stones content	0.26
34C:					
Kaymine	55	Very limited		Very limited	
		Unstable fill	1.00	Slope	1.00
		Slow water movement	0.68	Seepage	0.32
		Large stones content	0.03		
Fiveblock	25	Very limited		Very limited	
		Unstable fill	1.00	Seepage	1.00
		Seepage, bottom layer	1.00	Slope	1.00
				Large stones content	0.26
		Large stones content	0.05		
Cedarcreek	20	Very limited		Very limited	
		Unstable fill	1.00	Slope	1.00
		Slow water movement	0.68	Seepage	0.32
		Slope	0.01		
35C:					
Lily	90	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Seepage, bottom layer	1.00	Slope	1.00
		Slope	0.63	Seepage	1.00
35D:					
Lily	90	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
35E:					
Lily----------------	90	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
36A:					
Lobdell-------------	65	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Orrville------------	30	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
37D:					
Mandy---------------	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
Paddyknob-----------	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Seepage, bottom layer	1.00	Slope	1.00
		Slope	1.00	Seepage	1.00
Rock outcrop--------	10	Not rated		Not rated	
38D:					
Marrowbone----------	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
38E:					
Marrowbone----------	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
38F:					
Marrowbone----------	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
39D:					
Marrowbone----------	50	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Gilpin--------------	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Depth to soft bedrock	1.00
		Slow water movement	0.50	Slope	1.00
39E:					
Marrowbone----------	60	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Gilpin--------------	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Depth to soft bedrock	1.00
		Slow water movement	0.50	Slope	1.00
39F:					
Marrowbone----------	75	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Gilpin--------------	15	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Depth to soft bedrock	1.00
		Slow water movement	0.50	Slope	1.00
40F:					
Matewan-------------	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Filtering capacity	1.00	Slope	1.00
		Slope	1.00	Seepage	1.00
Rock outcrop--------	40	Not rated		Not rated	
41A:					
Ogles---------------	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Large stones content	1.00
		Large stones content	1.00	Seepage	1.00

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
42C:					
Oriskany------------	75	Very limited		Very limited	
		Seepage, bottom layer	1.00	Slope	1.00
		Slope	0.63	Seepage	1.00
		Large stones content	0.01	Large stones content	0.41
42D:					
Oriskany------------	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
		Large stones content	0.01	Large stones content	0.41
42E:					
Oriskany------------	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
		Large stones content	0.01	Large stones content	0.41
43:					
Pits, quarry--------	95	Not rated		Not rated	
44C:					
Poplimento----------	45	Very limited		Very limited	
		Slow water movement	1.00	Slope	1.00
		Slope	0.63		
Westmoreland--------	40	Somewhat limited		Very limited	
		Slope	0.63	Slope	1.00
		Depth to bedrock	0.59	Seepage	0.50
		Slow water movement	0.50	Depth to hard bedrock	0.13
45F:					
Ramsey--------------	75	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Rock outcrop--------	15	Not rated		Not rated	
46F:					
Rock outcrop--------	45	Not rated		Not rated	
Beech Grove---------	25	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
46F:					
Benthole	25	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	0.49	Large stones content	0.98
		Slow water movement	0.46	Seepage	0.54
47F:					
Sewell	55	Very limited		Very limited	
		Slope	1.00	Seepage	1.00
		Seepage, bottom layer	1.00	Slope	1.00
		Large stones content	0.10	Large stones content	0.58
Kaymine	30	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.68	Seepage	0.32
		Large stones content	0.03		
Rock outcrop	10	Not rated		Not rated	
48E:					
Shelocta	70	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.54
Cedarcreek	25	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Unstable fill	1.00	Seepage	0.32
		Slow water movement	0.68		
49E:					
Shelocta	50	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.54
Highsplint	40	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
		Large stones content	0.01	Large stones content	0.17
50F:					
Shelocta	55	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.54
Kaymine	40	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Unstable fill	1.00	Seepage	0.32
		Slow water movement	0.68		

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
51F:					
Stonecoal-----------	85	Very limited		Very limited	
		Unstable fill	1.00	Seepage	1.00
		Filtering capacity	1.00	Slope	1.00
		Slope	1.00	Large stones content	0.78
52C:					
Tumbling------------	85	Somewhat limited		Very limited	
		Slope	0.63	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
52D:					
Tumbling------------	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
53E:					
Tumbling------------	85	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
54F:					
Udorthents----------	45	Not rated		Not rated	
Urban land----------	30	Not rated		Not rated	
55D:					
Wallen--------------	90	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
55F:					
Wallen--------------	90	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
56D:					
Wallen--------------	65	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Rock outcrop--------	25	Not rated		Not rated	
56F:					
Wallen--------------	65	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Rock outcrop--------	25	Not rated		Not rated	

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
57C:					
Watahala------------	95	Somewhat limited		Very limited	
		Slope	0.63	Slope	1.00
		Slow water movement	0.50	Seepage	1.00
57D:					
Watahala------------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	1.00
57E:					
Watahala------------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	1.00
57F:					
Watahala------------	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	1.00
58D:					
Watahala------------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	1.00
58E:					
Watahala------------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	1.00
59D:					
Wharton-------------	45	Very limited		Very limited	
		Depth to saturated zone	1.00	Slope	1.00
		Slope	1.00	Depth to saturated zone	0.98
		Slow water movement	1.00		
Gilpin--------------	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Depth to soft bedrock	1.00
		Slow water movement	0.50	Slope	1.00
Berks---------------	15	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Depth to soft bedrock	1.00
		Seepage, bottom layer	1.00	Slope	1.00

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
60C:					
Wharton	45	Very limited		Very limited	
		Depth to saturated zone	1.00	Slope	1.00
		Slow water movement	1.00	Depth to saturated zone	0.98
		Slope	0.16		
Gilpin	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slow water movement	0.50	Depth to soft bedrock	1.00
		Slope	0.16	Slope	1.00
Marrowbone	20	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Seepage, bottom layer	1.00	Slope	1.00
		Slope	0.16	Seepage	1.00
61B:					
Wyrick	55	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Slope	0.92
				Seepage	0.50
Marbie	40	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	1.00	Slope	0.92
		Slow water movement	0.50	Depth to saturated zone	0.75
61C:					
Wyrick	55	Somewhat limited		Very limited	
		Slope	0.63	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
Marbie	40	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	1.00	Slope	1.00
		Slope	0.63	Depth to saturated zone	0.75
W:					
Water	100	Not rated		Not rated	

Table 12.—Sanitary Facilities, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1E:							
Berks	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	0.99
Chiswell	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	1.00
1F:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	0.99
Chiswell	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	1.00
2D:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	0.99
Gilpin	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50
2E:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	0.99
Gilpin	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50
2F:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	0.99

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2F:							
Gilpin	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50
3C:							
Berks	55	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	0.99
		Slope	0.63	Slope	0.63	Slope	0.63
Groseclose	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.63	Slope	0.63	Slope	0.63
3D:							
Berks	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	0.99
Groseclose	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
4D:							
Berks	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	0.99
Poplimento	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50
5C:							
Berks	45	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	0.99
		Slope	0.63	Slope	0.63	Slope	0.63
Weikert	45	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Seepage, bottom layer	1.00	Slope	0.63	Gravel content	1.00
		Slope	0.63			Slope	0.63
5D:							
Berks	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	0.99

Table 12.—Sanitary Facilities, Part II--Continu=ed

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
5D:							
Weikert	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00			Gravel content	1.00
5E:							
Berks	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	0.99
Weikert	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00			Gravel content	1.00
5F:							
Berks	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	0.99
Weikert	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00			Gravel content	1.00
6E:							
Berks	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	0.99
Westmoreland	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	0.14	Too clayey	0.50
		Too clayey	0.50			Depth to bedrock	0.14
6F:							
Berks	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	0.99
Westmoreland	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	0.14	Too clayey	0.50
		Too clayey	0.50			Depth to bedrock	0.14

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
7E:							
Bland---------------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
8D:							
Bland---------------	80	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00	Slope	1.00	Too clayey	1.00
		Slope	1.00			Hard to compact	1.00
Rock outcrop--------	15	Not rated		Not rated		Not rated	
8E:							
Bland---------------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
Rock outcrop--------	15	Not rated		Not rated		Not rated	
9D:							
Bland---------------	80	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00	Slope	1.00	Too clayey	1.00
		Slope	1.00			Hard to compact	1.00
Rock outcrop--------	15	Not rated		Not rated		Not rated	
10D:							
Calvin--------------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.50
11F:							
Calvin--------------	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.50
Rough---------------	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00			Seepage	1.00
12C:							
Carbo---------------	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00	Slope	0.63	Too clayey	1.00
		Slope	0.63			Hard to compact	1.00
Beech Grove---------	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.63	Slope	0.63	Slope	0.63
						Gravel content	0.48

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
12D:							
Carbo	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
Beech Grove	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.48
12E:							
Carbo	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
Beech Grove	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.48
12F:							
Carbo	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
Beech Grove	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.48
13C:							
Carbo	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00	Slope	0.01	Too clayey	1.00
		Slope	0.01			Hard to compact	1.00
Frederick	34	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Slope	0.01	Too clayey	1.00
		Slope	0.01			Hard to compact	1.00
						Slope	0.01
Urban land	30	Not rated		Not rated		Not rated	
14D:							
Carbo	60	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00	Slope	1.00	Too clayey	1.00
		Slope	1.00			Hard to compact	1.00
Rock outcrop	15	Not rated		Not rated		Not rated	
14E:							
Carbo	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
Rock outcrop		Not rated		Not rated		Not rated	

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
15D:							
Carbo	60	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00	Slope	1.00	Too clayey	1.00
		Slope	1.00			Hard to compact	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
16C:							
Cedarcreek	35	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.01	Slope	0.01	Gravel content	1.00
						Slope	0.01
Sewell	30	Very limited		Very limited		Somewhat limited	
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	0.92
		Large stones content	0.14	Slope	0.01	Large stones content	0.14
		Slope	0.01			Seepage	0.09
Rock outcrop	10	Not rated		Not rated		Not rated	
17A:							
Chagrin	90	Very limited		Very limited		Not limited	
		Flooding	1.00	Flooding	1.00		
		Depth to saturated zone	1.00	Depth to saturated zone	1.00		
18:							
Dumps, mine	85	Not rated		Not rated		Not rated	
Urban land	15	Not rated		Not rated		Not rated	
19C:							
Frederick	95	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Slope	0.63	Too clayey	1.00
		Slope	0.63			Hard to compact	1.00
						Slope	0.63
19D:							
Frederick	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
19E:							
Frederick	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
19F:							
Frederick	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
20C:							
Frederick-----------	95	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Slope	0.63	Too clayey	1.00
		Slope	0.63			Hard to compact	1.00
						Slope	0.63
20D:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
21C:							
Frederick-----------	95	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Slope	0.63	Too clayey	1.00
		Slope	0.63			Hard to compact	1.00
						Slope	0.63
21D:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
21E:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
21F:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
22C:							
Frederick-----------	95	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Slope	0.63	Too clayey	1.00
		Slope	0.63			Hard to compact	1.00
						Slope	0.63
22D:							
Frederick-----------	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
23D:							
Gilpin--------------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50
24D:							
Gilpin--------------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.39

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
24D:							
Berks	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	0.93
24F:							
Gilpin	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.39
Berks	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	0.93
25E:							
Gilpin	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50
Shelocta	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50			Gravel content	0.52
						Too clayey	0.50
26F:							
Gilpin	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50
Shelocta	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50			Gravel content	0.52
						Too clayey	0.50
27A:							
Grigsby	95	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Seepage	0.21
		Depth to saturated zone	1.00	Depth to saturated zone	1.00		
		Seepage, bottom layer	1.00	Seepage	1.00		
28C:							
Highsplint	90	Very limited		Very limited		Somewhat limited	
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.51
		Slope	0.37	Slope	0.37	Slope	0.37
		Large stones content	0.01			Gravel content	0.27

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
28D:							
Highsplint----------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.51
						Gravel content	0.27
		Large stones content	0.01				
29F:							
Highsplint----------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.51
						Gravel content	0.27
		Large stones content	0.01				
Shelocta------------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.40
30A:							
Holly---------------	97	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
				Depth to saturated zone	1.00		
		Ponding	1.00			Seepage	0.21
31D:							
Kaymine-------------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.39			Large stones content	0.39
						Gravel content	0.16
32E:							
Kaymine-------------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.39			Large stones content	0.39
						Gravel content	0.16
Cedarcreek----------	15	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	1.00
33F:							
Kaymine-------------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.39			Large stones content	0.39
						Gravel content	0.16
Fiveblock-----------	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	0.89
						Large stones content	0.11
		Large stones content	0.11				

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
34C:							
Kaymine	55	Somewhat limited		Somewhat limited		Somewhat limited	
		Large stones content	0.39	Slope	0.01	Large stones content	0.39
		Slope	0.01			Gravel content	0.16
						Slope	0.01
Fiveblock	25	Very limited		Very limited		Somewhat limited	
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	0.89
		Large stones content	0.11	Slope	0.01	Large stones content	0.11
		Slope	0.01			Seepage	0.09
Cedarcreek	20	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.01	Slope	0.01	Gravel content	1.00
						Slope	0.01
35C:							
Lily	90	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Slope	0.63
		Slope	0.63	Slope	0.63	Seepage	0.50
35D:							
Lily	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.50
35E:							
Lily	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.50
36A:							
Lobdell	65	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.86
		Depth to saturated zone	1.00	Depth to saturated zone	1.00		
		Seepage, bottom layer	1.00				
Orrville	30	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.21
		Seepage, bottom layer	1.00	Seepage	1.00		
37D:							
Mandy	45	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.88

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
37D:							
Paddyknob-----------	40	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Seepage	1.00	Depth to bedrock	1.00
		Seepage, bottom layer	1.00	Depth to bedrock	1.00	Seepage	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
Rock outcrop--------	10	Not rated		Not rated		Not rated	
38D:							
Marrowbone----------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.51
38E:							
Marrowbone----------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.51
38F:							
Marrowbone----------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.51
39D:							
Marrowbone----------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.51
Gilpin--------------	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.39
39E:							
Marrowbone----------	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.51
Gilpin--------------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.39
39F:							
Marrowbone----------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.51

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
39F:							
Gilpin	15	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.39
40F:							
Matewan	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Seepage	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Depth to bedrock	1.00	Seepage	1.00
Rock outcrop	40	Not rated		Not rated		Not rated	
41A:							
Ogles	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Large stones	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.50
						Too sandy	0.50
		Large stones	1.00	Seepage	1.00		
42C:							
Oriskany	75	Very limited		Very limited		Somewhat limited	
		Seepage, bottom layer	1.00	Seepage	1.00	Slope	0.63
				Slope	0.63	Seepage	0.50
		Slope	0.63			Gravel content	0.13
		Large stones content	0.01				
42D:							
Oriskany	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.50
						Gravel content	0.13
		Large stones content	0.01				
42E:							
Oriskany	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.50
						Gravel content	0.13
		Large stones content	0.01				
43:							
Pits, quarry	95	Not rated		Not rated		Not rated	
44C:							
Poplimento	45	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.63	Slope	0.63	Slope	0.63
		Too clayey	0.50			Too clayey	0.50
Westmoreland	40	Very limited		Somewhat limited		Somewhat limited	
		Depth to bedrock	1.00	Slope	0.63	Slope	0.63
		Slope	0.63	Depth to bedrock	0.14	Too clayey	0.50
		Too clayey	0.50			Depth to bedrock	0.14

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
45F:							
Ramsey	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00			Seepage	1.00
Rock outcrop	15	Not rated		Not rated		Not rated	
46F:							
Rock outcrop	45	Not rated		Not rated		Not rated	
Beech Grove	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.48
Benthole	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.80			Large stones content	0.80
		Too clayey	0.50			Too clayey	0.50
47F:							
Sewell	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	0.92
		Large stones content	0.14			Large stones content	0.14
Kaymine	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.39			Large stones content	0.39
						Gravel content	0.16
Rock outcrop	10	Not rated		Not rated		Not rated	
48E:							
Shelocta	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.40
Cedarcreek	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	1.00
49E:							
Shelocta	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.40
Highsplint	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.51
		Large stones content	0.01			Gravel content	0.27

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50F:							
Shelocta------------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.40
Kaymine-------------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.39			Large stones content	0.39
						Gravel content	0.16
51F:							
Stonecoal-----------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Slope	1.00
						Seepage	1.00
		Too sandy	0.50				
52C:							
Tumbling------------	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.63	Slope	0.63	Slope	0.63
		Too clayey	0.50			Too clayey	0.50
52D:							
Tumbling------------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50
53E:							
Tumbling------------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50
54F:							
Udorthents----------	45	Not rated		Not rated		Not rated	
Urban land----------	30	Not rated		Not rated		Not rated	
55D:							
Wallen--------------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.50
55F:							
Wallen--------------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.50
56D:							
Wallen--------------	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.50
Rock outcrop--------	25	Not rated		Not rated		Not rated	

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
56F:							
Wallen	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.50
Rock outcrop	25	Not rated		Not rated		Not rated	
57C:							
Watahala	95	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.63	Seepage	1.00	Gravel content	0.99
				Slope	0.63	Slope	0.63
						Seepage	0.50
57D:							
Watahala	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Seepage	1.00	Gravel content	0.99
						Seepage	0.50
57E:							
Watahala	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Seepage	1.00	Gravel content	0.99
						Seepage	0.50
57F:							
Watahala	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Seepage	1.00	Gravel content	0.99
						Seepage	0.50
58D:							
Watahala	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Seepage	1.00	Gravel content	0.99
						Seepage	0.50
58E:							
Watahala	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Seepage	1.00	Gravel content	0.99
						Seepage	0.50
59D:							
Wharton	45	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Slope	1.00	Slope	1.00
		Slope	1.00	Depth to saturated zone	0.98	Depth to saturated zone	0.99
		Depth to bedrock	1.00			Too clayey	0.50
Gilpin	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.39

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
59D:							
Berks	15	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Gravel content	0.93
60C:							
Wharton	45	Very limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.98	Depth to saturated zone	0.99
		Depth to bedrock	1.00	Slope	0.16	Too clayey	0.50
		Too clayey	0.50			Slope	0.16
Gilpin	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.16	Slope	0.16	Gravel content	0.39
						Slope	0.16
Marrowbone	20	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.51
		Slope	0.16	Slope	0.16	Gravel content	0.41
61B:							
Wyrick	55	Somewhat limited		Not limited		Somewhat limited	
		Too clayey	0.50			Too clayey	0.50
Marbie	40	Very limited		Very limited		Very limited	
		Depth to thick cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	0.99	Depth to saturated zone	0.75	Depth to saturated zone	0.86
61C:							
Wyrick	55	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.63	Slope	0.63	Slope	0.63
		Too clayey	0.50			Too clayey	0.50
Marbie	40	Very limited		Very limited		Very limited	
		Depth to thick cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	0.99	Depth to saturated zone	0.75	Depth to saturated zone	0.86
		Slope	0.63	Slope	0.63	Slope	0.63
W:							
Water	100	Not rated		Not rated		Not rated	

Table 13.—Construction Materials, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
1E:					
Berks	50	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.25	Thickest layer	0.00
Chiswell	40	Fair		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.12	Bottom layer	0.00
1F:					
Berks	45	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.25	Thickest layer	0.00
Chiswell	45	Fair		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.12	Bottom layer	0.00
2D:					
Berks	45	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.25	Thickest layer	0.00
Gilpin	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
2E:					
Berks	45	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.25	Thickest layer	0.00
Gilpin	40	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
2F:					
Berks	45	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.25	Thickest layer	0.00
Gilpin	40	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
3C:					
Berks	55	Fair		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.25	Bottom layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
3C:					
Groseclose----------	40	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
3D:					
Berks---------------	55	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.25	Thickest layer	0.00
Groseclose----------	40	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
4D:					
Berks---------------	50	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.25	Thickest layer	0.00
Poplimento----------	40	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
5C:					
Berks---------------	45	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.25	Thickest layer	0.00
Weikert-------------	45	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.38	Thickest layer	0.00
5D:					
Berks---------------	45	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.25	Thickest layer	0.00
Weikert-------------	45	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.38	Thickest layer	0.00
5E:					
Berks---------------	65	Fair		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.25	Bottom layer	0.00
Weikert-------------	25	Fair		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.38	Bottom layer	0.00
5F:					
Berks---------------	60	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.25	Thickest layer	0.00
Weikert-------------	30	Fair		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.38	Bottom layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
6E:					
Berks---------------	55	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.25	Thickest layer	0.00
Westmoreland--------	35	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
6F:					
Berks---------------	65	Fair		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.25	Bottom layer	0.00
Westmoreland--------	30	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
7E:					
Bland---------------	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
8D:					
Bland---------------	80	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Rock outcrop--------	15	Not rated		Not rated	
8E:					
Bland---------------	80	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Rock outcrop--------	15	Not rated		Not rated	
9D:					
Bland---------------	80	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Rock outcrop--------	15	Not rated		Not rated	
10D:					
Calvin--------------	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
11F:					
Calvin--------------	70	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rough---------------	20	Fair		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.25	Bottom layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
12C:					
Carbo	50	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Beech Grove	30	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
12D:					
Carbo	60	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
Beech Grove	30	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
12E:					
Carbo	60	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Beech Grove	30	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
12F:					
Carbo	60	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
Beech Grove	30	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
13C:					
Carbo	35	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
Frederick	34	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
Urban land	30	Not rated		Not rated	
14D:					
Carbo	60	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop	15	Not rated		Not rated	
14E:					
Carbo	80	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
Rock outcrop	15	Not rated		Not rated	

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
15D:					
Carbo	60	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
Rock outcrop	30	Not rated		Not rated	
16C:					
Cedarcreek	35	Fair		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.12	Bottom layer	0.00
Sewell	30	Fair		Fair	
		Thickest layer	0.00	Thickest layer	0.04
		Bottom layer	0.12	Bottom layer	0.04
Rock outcrop	10	Not rated		Not rated	
17A:					
Chagrin	90	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.03
18:					
Dumps, mine	85	Not rated		Not rated	
Urban land	15	Not rated		Not rated	
19C:					
Frederick	95	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
19D:					
Frederick	95	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
19E:					
Frederick	95	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
19F:					
Frederick	95	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
20C:					
Frederick	95	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
20D:					
Frederick	95	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
21C:					
Frederick-----------	95	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
21D:					
Frederick-----------	95	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
21E:					
Frederick-----------	95	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
21F:					
Frederick-----------	95	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
22C:					
Frederick-----------	95	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
22D:					
Frederick-----------	95	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
23D:					
Gilpin--------------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
24D:					
Gilpin--------------	55	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
Berks---------------	30	Fair		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.25	Bottom layer	0.00
24F:					
Gilpin--------------	55	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Berks---------------	35	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.25	Thickest layer	0.00
25E:					
Gilpin--------------	65	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
Shelocta------------	30	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.25	Thickest layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
26F:					
Gilpin	60	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Shelocta	35	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.25	Thickest layer	0.00
27A:					
Grigsby	95	Poor		Fair	
		Thickest layer	0.00	Bottom layer	0.02
		Bottom layer	0.00	Thickest layer	0.03
28C:					
Highsplint	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
28D:					
Highsplint	90	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
29F:					
Highsplint	55	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
Shelocta	40	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
30A:					
Holly	97	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
31D:					
Kaymine	90	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
32E:					
Kaymine	85	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
Cedarcreek	15	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.12	Thickest layer	0.00
33F:					
Kaymine	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Fiveblock	45	Fair		Fair	
		Thickest layer	0.00	Thickest layer	0.04
		Bottom layer	0.12	Bottom layer	0.04

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
34C:					
Kaymine	55	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
Fiveblock	25	Fair		Fair	
		Thickest layer	0.00	Bottom layer	0.04
		Bottom layer	0.12	Thickest layer	0.04
Cedarcreek	20	Fair		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.12	Bottom layer	0.00
35C:					
Lily	90	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.03
35D:					
Lily	90	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03
35E:					
Lily	90	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03
36A:					
Lobdell	65	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Orrville	30	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03
37D:					
Mandy	45	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.15	Thickest layer	0.00
Paddyknob	40	Poor		Fair	
		Thickest layer	0.00	Bottom layer	0.04
		Bottom layer	0.00	Thickest layer	0.04
Rock outcrop	10	Not rated		Not rated	
38D:					
Marrowbone	85	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.04
		Thickest layer	0.00	Bottom layer	0.07
38E:					
Marrowbone	85	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.04
		Bottom layer	0.00	Bottom layer	0.07

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
38F:					
Marrowbone----------	85	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.04
		Bottom layer	0.00	Bottom layer	0.07
39D:					
Marrowbone----------	50	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.04
		Thickest layer	0.00	Bottom layer	0.07
Gilpin--------------	45	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
39E:					
Marrowbone----------	60	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.04
		Thickest layer	0.00	Bottom layer	0.07
Gilpin--------------	35	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
39F:					
Marrowbone----------	75	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.04
		Bottom layer	0.00	Bottom layer	0.07
Gilpin--------------	15	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
40F:					
Matewan-------------	45	Poor		Fair	
		Thickest layer	0.00	Bottom layer	0.03
		Bottom layer	0.00	Thickest layer	0.03
Rock outcrop--------	40	Not rated		Not rated	
41A:					
Ogles---------------	90	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
42C:					
Oriskany------------	75	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
42D:					
Oriskany------------	75	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
42E:					
Oriskany------------	75	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
43:					
Pits, quarry	95	Not rated		Not rated	
44C:					
Poplimento	45	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
Westmoreland	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
45F:					
Ramsey	75	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.03
Rock outcrop	15	Not rated		Not rated	
46F:					
Rock outcrop	45	Not rated		Not rated	
Beech Grove	25	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
Benthole	25	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
47F:					
Sewell	55	Fair		Fair	
		Thickest layer	0.00	Thickest layer	0.04
		Bottom layer	0.12	Bottom layer	0.04
Kaymine	30	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
Rock outcrop	10	Not rated		Not rated	
48E:					
Shelocta	70	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
Cedarcreek	25	Fair		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.12	Bottom layer	0.00
49E:					
Shelocta	50	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
Highsplint	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
50F:					
Shelocta	55	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
Kaymine	40	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
51F:					
Stonecoal	85	Fair		Fair	
		Bottom layer	0.14	Thickest layer	0.04
		Thickest layer	0.14	Bottom layer	0.10
52C:					
Tumbling	85	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
52D:					
Tumbling	80	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
53E:					
Tumbling	85	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
54F:					
Udorthents	45	Not rated		Not rated	
Urban land	30	Not rated		Not rated	
55D:					
Wallen	90	Poor		Fair	
		Thickest layer	0.00	Bottom layer	0.03
		Bottom layer	0.00	Thickest layer	0.03
55F:					
Wallen	90	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.03
		Thickest layer	0.00	Thickest layer	0.03
56D:					
Wallen	65	Poor		Fair	
		Thickest layer	0.00	Bottom layer	0.03
		Bottom layer	0.00	Thickest layer	0.03
Rock outcrop	25	Not rated		Not rated	
56F:					
Wallen	65	Poor		Fair	
		Thickest layer	0.00	Bottom layer	0.03
		Bottom layer	0.00	Thickest layer	0.03
Rock outcrop	25	Not rated		Not rated	

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
57C:					
Watahala	95	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
57D:					
Watahala	95	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
57E:					
Watahala	95	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
57F:					
Watahala	90	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
58D:					
Watahala	95	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
58E:					
Watahala	95	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
59D:					
Wharton	45	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
Gilpin	40	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Berks	15	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.25	Thickest layer	0.00
60C:					
Wharton	45	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Gilpin	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Marrowbone	20	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.04
		Thickest layer	0.00	Bottom layer	0.07
61B:					
Wyrick	55	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
61B:					
Marbie	40	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
61C:					
Wyrick	55	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Marbie	40	Poor		Poor	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
W:					
Water	100	Not rated		Not rated	

Table 13.—Construction Materials, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1E:							
Berks	50	Fair		Poor		Poor	
		Droughty	0.12	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Depth to bedrock	0.00	Rock fragments	0.00
		Too acid	0.50			Too acid	0.76
Chiswell	40	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.12			Depth to bedrock	0.00
1F:							
Berks	45	Fair		Poor		Poor	
		Droughty	0.12	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Depth to bedrock	0.00	Rock fragments	0.00
		Too acid	0.50			Too acid	0.76
Chiswell	45	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.00	Depth to bedrock	0.00
		Organic matter content low	0.12			Rock fragments	0.00
2D:							
Berks	45	Fair		Poor		Poor	
		Droughty	0.12	Depth to bedrock	0.00	Rock fragments	0.00
		Organic matter content low	0.12	Slope	0.00	Slope	0.00
		Too acid	0.50			Too acid	0.76
Gilpin	40	Fair		Poor		Poor	
		Organic matter content low	0.12	Depth to bedrock	0.00	Slope	0.00
		Too acid	0.50	Slope	0.00	Depth to bedrock	0.65
		Droughty	0.57	Low strength	0.78	Rock fragments	0.88
2E:							
Berks	45	Fair		Poor		Poor	
		Droughty	0.12	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
		Too acid	0.50			Too acid	0.76
Gilpin	40	Fair		Poor		Poor	
		Organic matter content low	0.12	Depth to bedrock	0.00	Slope	0.00
		Too acid	0.50	Slope	0.00	Depth to bedrock	0.65
		Droughty	0.57	Low strength	0.78	Rock fragments	0.88

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
2F:							
Berks	45	Fair		Poor		Poor	
		Droughty	0.12	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
		Too acid	0.50			Too acid	0.76
Gilpin	40	Fair		Poor		Poor	
		Organic matter content low	0.12	Depth to bedrock	0.00	Slope	0.00
		Too acid	0.50	Slope	0.00	Depth to bedrock	0.65
		Droughty	0.57	Low strength	0.78	Rock fragments	0.88
3C:							
Berks	55	Fair		Poor		Poor	
		Droughty	0.12	Depth to bedrock	0.00	Rock fragments	0.00
		Organic matter content low	0.12			Slope	0.37
		Too acid	0.50			Too acid	0.76
Groseclose	40	Fair		Fair		Fair	
		Too clayey	0.02	Shrink-swell	0.53	Too clayey	0.01
		Organic matter content low	0.12			Hard to reclaim (rock fragments)	0.08
		Too acid	0.50			Slope	0.37
3D:							
Berks	55	Fair		Poor		Poor	
		Droughty	0.12	Depth to bedrock	0.00	Rock fragments	0.00
		Organic matter content low	0.12	Slope	0.00	Slope	0.00
		Too acid	0.50			Too acid	0.76
Groseclose	40	Fair		Poor		Poor	
		Too clayey	0.02	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Shrink-swell	0.53	Too clayey	0.01
		Too acid	0.50			Hard to reclaim (rock fragments)	0.08
4D:							
Berks	50	Fair		Poor		Poor	
		Droughty	0.12	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Depth to bedrock	0.00	Rock fragments	0.00
		Too acid	0.50			Too acid	0.76
Poplimento	40	Poor		Poor		Poor	
		Too clayey	0.00	Slope	0.00	Slope	0.00
		Organic matter content low	0.02	Shrink-swell	0.49	Too clayey	0.00
		Too acid	0.50				
5C:							
Berks	45	Fair		Poor		Poor	
		Droughty	0.12	Depth to bedrock	0.00	Rock fragments	0.00
		Organic matter content low	0.12			Slope	0.37
		Too acid	0.50			Too acid	0.76

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
5C:							
Weikert	45	Poor		Poor		Poor	
		Depth to bedrock	0.00	Depth to bedrock	0.00	Rock fragments	0.00
		Droughty	0.00			Depth to bedrock	0.00
		Organic matter content low	0.12			Slope	0.37
5D:							
Berks	45	Fair		Poor		Poor	
		Droughty	0.12	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
		Too acid	0.50			Too acid	0.76
Weikert	45	Poor		Poor		Poor	
		Droughty	0.00	Slope	0.00	Slope	0.00
		Depth to bedrock	0.00	Depth to bedrock	0.00	Rock fragments	0.00
		Organic matter content low	0.12			Depth to bedrock	0.00
5E:							
Berks	65	Fair		Poor		Poor	
		Droughty	0.12	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.12	Depth to bedrock	0.00	Slope	0.00
		Too acid	0.50			Too acid	0.76
Weikert	25	Poor		Poor		Poor	
		Droughty	0.00	Slope	0.00	Rock fragments	0.00
		Depth to bedrock	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12			Depth to bedrock	0.00
5F:							
Berks	60	Fair		Poor		Poor	
		Droughty	0.12	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Depth to bedrock	0.00	Rock fragments	0.00
		Too acid	0.50			Too acid	0.76
Weikert	30	Poor		Poor		Poor	
		Droughty	0.00	Slope	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00	Depth to bedrock	0.00	Rock fragments	0.00
		Organic matter content low	0.12			Slope	0.00
6E:							
Berks	55	Fair		Poor		Poor	
		Droughty	0.12	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.12	Depth to bedrock	0.00	Slope	0.00
		Too acid	0.50			Too acid	0.76
Westmoreland	35	Fair		Poor		Poor	
		Organic matter content low	0.12	Slope	0.00	Hard to reclaim (rock fragments)	0.00
		Too acid	0.50	Low strength	0.22	Slope	0.00
		Water erosion	0.99	Depth to bedrock	0.87	Rock fragments	0.88

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
6F:							
Berks	65	Fair		Poor		Poor	
		Droughty	0.12	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
		Too acid	0.50			Too acid	0.76
Westmoreland	30	Fair		Poor		Poor	
		Organic matter content low	0.12	Slope	0.00	Slope	0.00
		Too acid	0.50	Low strength	0.22	Hard to reclaim (rock fragments)	0.00
		Water erosion	0.99	Depth to bedrock	0.87	Rock fragments	0.88
7E:							
Bland	85	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Too clayey	0.00
		Too acid	0.61	Low strength	0.00	Depth to bedrock	0.93
8D:							
Bland	80	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Organic matter content low	0.12	Low strength	0.00	Slope	0.00
		Too acid	0.61	Shrink-swell	0.87	Depth to bedrock	0.93
Rock outcrop	15	Not rated		Not rated		Not rated	
8E:							
Bland	80	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Too clayey	0.00
		Too acid	0.61	Low strength	0.00	Depth to bedrock	0.93
Rock outcrop	15	Not rated		Not rated		Not rated	
9D:							
Bland	80	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Organic matter content low	0.12	Low strength	0.00	Slope	0.00
		Too acid	0.61	Slope	0.18	Depth to bedrock	0.93
Rock outcrop	15	Not rated		Not rated		Not rated	
10D:							
Calvin	85	Fair		Poor		Poor	
		Organic matter content low	0.12	Slope	0.00	Slope	0.00
		Droughty	0.16	Depth to bedrock	0.00	Rock fragments	0.00
		Too acid	0.50			Depth to bedrock	0.54
11F:							
Calvin	70	Fair		Poor		Poor	
		Organic matter content low	0.12	Depth to bedrock	0.00	Slope	0.00
		Droughty	0.16	Slope	0.00	Rock fragments	0.00
		Too acid	0.50		0.00	Depth to bedrock	0.54

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
11F:							
Rough	20	Poor		Poor		Poor	
		Depth to bedrock	0.00	Depth to bedrock	0.00	Slope	0.00
		Droughty	0.00	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.50			Depth to bedrock	0.00
12C:							
Carbo	50	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.10	Low strength	0.00	Slope	0.37
		Organic matter content low	0.12	Shrink-swell	0.12	Depth to bedrock	0.46
Beech Grove	30	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Rock fragments	0.00
		Depth to bedrock	0.00			Depth to bedrock	0.00
						Slope	0.37
12D:							
Carbo	60	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Droughty	0.10	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Shrink-swell	0.12	Depth to bedrock	0.46
Beech Grove	30	Poor		Poor		Poor	
		Depth to bedrock	0.00	Depth to bedrock	0.00	Slope	0.00
		Droughty	0.00	Slope	0.50	Depth to bedrock	0.00
						Rock fragments	0.00
12E:							
Carbo	60	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Droughty	0.10	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Depth to bedrock	0.00	Depth to bedrock	0.46
Beech Grove	30	Poor		Poor		Poor	
		Droughty	0.00	Slope	0.00	Slope	0.00
		Depth to bedrock	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
						Rock fragments	0.00
12F:							
Carbo	60	Poor		Poor		Poor	
		Too clayey	0.00	Slope	0.00	Slope	0.00
		Droughty	0.10	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Depth to bedrock	0.00	Depth to bedrock	0.46
Beech Grove	30	Poor		Poor		Poor	
		Depth to bedrock	0.00	Slope	0.00	Rock fragments	0.00
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
						Slope	0.00

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
13C:							
Carbo	35	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Droughty	0.10	Depth to bedrock	0.00	Depth to bedrock	0.46
		Organic matter content low	0.12	Shrink-swell	0.12		
Frederick	34	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.87	Too acid	0.76
		Too acid	0.50				
Urban land	30	Not rated		Not rated		Not rated	
14D:							
Carbo	60	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Slope	0.00
		Droughty	0.10	Depth to bedrock	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.12	Depth to bedrock	0.46
Rock outcrop	15	Not rated		Not rated		Not rated	
14E:							
Carbo	80	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Droughty	0.10	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Depth to bedrock	0.00	Depth to bedrock	0.46
Rock outcrop	15	Not rated		Not rated		Not rated	
15D:							
Carbo	60	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.10	Low strength	0.00	Slope	0.00
		Organic matter content low	0.12	Shrink-swell	0.12	Depth to bedrock	0.46
Rock outcrop	30	Not rated		Not rated		Not rated	
16C:							
Cedarcreek	35	Fair		Fair		Poor	
		Organic matter content low	0.01	Stone content	0.68	Rock fragments	0.00
						Hard to reclaim (rock fragments)	0.00
		Droughty	0.14				
		Too acid	0.50			Too acid	0.68
Sewell	30	Poor		Poor		Poor	
		Droughty	0.00	Stone content	0.00	Rock fragments	0.00
		Stone content	0.00			Hard to reclaim (rock fragments)	0.00
		Organic matter content low	0.01				
						Too acid	0.98
Rock outcrop	10	Not rated		Not rated		Not rated	

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
17A:							
Chagrin-------------	90	Fair		Good		Good	
		Organic matter content low	0.50				
18:							
Dumps, mine---------	85	Not rated		Not rated		Not rated	
Urban land----------	15	Not rated		Not rated		Not rated	
19C:							
Frederick-----------	95	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.87	Slope	0.37
						Too acid	0.76
		Too acid	0.50				
19D:							
Frederick-----------	95	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.50	Too clayey	0.00
				Shrink-swell	0.87	Too acid	0.76
		Too acid	0.50				
19E:							
Frederick-----------	95	Poor		Poor		Poor	
		Too clayey	0.00	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Low strength	0.00	Too clayey	0.00
				Shrink-swell	0.87	Too acid	0.76
		Too acid	0.50				
19F:							
Frederick-----------	95	Poor		Poor		Poor	
		Too clayey	0.00	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Low strength	0.00	Too clayey	0.00
				Shrink-swell	0.87	Too acid	0.76
		Too acid	0.50				
20C:							
Frederick-----------	95	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.87	Slope	0.37
						Too acid	0.76
		Too acid	0.50				
20D:							
Frederick-----------	95	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Slope	0.50	Slope	0.00
				Shrink-swell	0.87	Too acid	0.76
		Too acid	0.50				
21C:							
Frederick-----------	95	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.87	Slope	0.37
						Too acid	0.76
		Too acid	0.50				

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
21D:							
Frederick-----------	95	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.50	Too clayey	0.00
		Too acid	0.50	Shrink-swell	0.87	Too acid	0.76
21E:							
Frederick-----------	95	Poor		Poor		Poor	
		Too clayey	0.00	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Low strength	0.00	Too clayey	0.00
		Too acid	0.50	Shrink-swell	0.87	Too acid	0.76
21F:							
Frederick-----------	95	Poor		Poor		Poor	
		Too clayey	0.00	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Low strength	0.00	Too clayey	0.00
		Too acid	0.50	Shrink-swell	0.87	Too acid	0.76
22C:							
Frederick-----------	95	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.87	Slope	0.37
		Too acid	0.50			Too acid	0.76
22D:							
Frederick-----------	95	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.50	Too clayey	0.00
		Too acid	0.50	Shrink-swell	0.87	Too acid	0.76
23D:							
Gilpin--------------	90	Fair		Poor		Poor	
		Organic matter content low	0.12	Depth to bedrock	0.00	Slope	0.00
		Too acid	0.50	Slope	0.00	Depth to bedrock	0.65
		Droughty	0.57	Low strength	0.78	Rock fragments	0.88
24D:							
Gilpin--------------	55	Poor		Poor		Poor	
		Wind erosion	0.00	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.12	Depth to bedrock	0.00	Slope	0.00
		Too acid	0.50			Depth to bedrock	0.90
Berks---------------	30	Fair		Poor		Poor	
		Droughty	0.08	Depth to bedrock	0.00	Rock fragments	0.00
		Organic matter content low	0.12	Slope	0.00	Slope	0.00
		Too acid	0.50			Depth to bedrock	0.84

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
24F:							
Gilpin	55	Poor		Poor		Poor	
		Wind erosion	0.00	Depth to bedrock	0.00	Rock fragments	0.00
		Organic matter content low	0.12	Slope	0.00	Slope	0.00
						Depth to bedrock	0.90
		Too acid	0.50				
Berks	35	Fair		Poor		Poor	
		Droughty	0.08	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.12	Depth to bedrock	0.00	Slope	0.00
						Depth to bedrock	0.84
		Too acid	0.50				
25E:							
Gilpin	65	Fair		Poor		Poor	
		Organic matter content low	0.12	Depth to bedrock	0.00	Slope	0.00
				Slope	0.00	Depth to bedrock	0.65
		Too acid	0.50	Low strength	0.78	Rock fragments	0.88
		Droughty	0.57				
Shelocta	30	Fair		Poor		Poor	
		Organic matter content low	0.12	Slope	0.00	Slope	0.00
						Rock fragments	0.00
		Too acid	0.32			Too acid	0.88
26F:							
Gilpin	60	Fair		Poor		Poor	
		Organic matter content low	0.12	Depth to bedrock	0.00	Slope	0.00
				Slope	0.00	Depth to bedrock	0.65
		Too acid	0.50	Low strength	0.78	Rock fragments	0.88
		Droughty	0.57				
Shelocta	35	Fair		Poor		Poor	
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
						Slope	0.00
		Too acid	0.32			Too acid	0.88
27A:							
Grigsby	95	Fair		Good		Good	
		Too acid	0.80				
		Organic matter content low	0.82				
28C:							
Highsplint	90	Fair		Fair		Poor	
		Too acid	0.16	Cobble content	0.79	Hard to reclaim (rock fragments)	0.00
		Organic matter content low	0.50				
						Rock fragments	0.00
						Slope	0.63
28D:							
Highsplint	90	Fair		Poor		Poor	
		Too acid	0.16	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.50	Cobble content	0.79	Hard to reclaim (rock fragments)	0.00
						Slope	0.00

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
29F:							
Highsplint	55	Fair		Poor		Poor	
		Too acid	0.16	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.50	Cobble content	0.79	Hard to reclaim (rock fragments)	0.00
						Slope	0.00
Shelocta	40	Fair		Poor		Poor	
		Organic matter content low	0.02	Slope	0.00	Slope	0.00
						Hard to reclaim (rock fragments)	0.00
		Too acid	0.32			Rock fragments	0.00
30A:							
Holly	97	Fair		Poor		Poor	
		Organic matter content low	0.50	Wetness depth	0.00	Wetness depth	0.00
		Too acid	0.97				
		Water erosion	0.99				
31D:							
Kaymine	90	Fair		Poor		Poor	
		Organic matter content low	0.01	Slope	0.00	Hard to reclaim (rock fragments)	0.00
				Cobble content	0.73		
		Stone content	0.37	Stone content	0.99	Rock fragments	0.00
						Slope	0.00
32E:							
Kaymine	85	Fair		Poor		Poor	
		Organic matter content low	0.01	Slope	0.00	Rock fragments	0.00
				Cobble content	0.73	Slope	0.00
		Stone content	0.37	Stone content	0.99	Hard to reclaim (rock fragments)	0.00
Cedarcreek	15	Fair		Poor		Poor	
		Organic matter content low	0.01	Slope	0.00	Slope	0.00
				Stone content	0.68	Rock fragments	0.00
		Droughty	0.14			Hard to reclaim (rock fragments)	0.00
		Too acid	0.50				
33F:							
Kaymine	50	Fair		Poor		Poor	
		Organic matter content low	0.01	Slope	0.00	Hard to reclaim (rock fragments)	0.00
				Cobble content	0.73		
		Stone content	0.37	Stone content	0.99	Rock fragments	0.00
						Slope	0.00
Fiveblock	45	Poor		Poor		Poor	
		Stone content	0.00	Stone content	0.00	Hard to reclaim (rock fragments)	0.00
		Droughty	0.00	Slope	0.00		
		Organic matter content low	0.01			Rock fragments	0.00
						Slope	0.00
34C:							
Kaymine	55	Fair		Fair		Poor	
		Organic matter content low	0.01	Cobble content	0.73	Hard to reclaim (rock fragments)	0.00
				Stone content	0.99		
		Stone content	0.37			Rock fragments	0.00

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
34C:							
Fiveblock	25	Poor		Poor		Poor	
		Stone content	0.00	Stone content	0.00	Rock fragments	0.00
		Droughty	0.00			Hard to reclaim (rock fragments)	0.00
		Organic matter content low	0.01				
Cedarcreek	20	Fair		Fair		Poor	
		Organic matter content low	0.01	Stone content	0.68	Hard to reclaim (rock fragments)	0.00
		Droughty	0.14			Rock fragments	0.00
		Too acid	0.50			Too acid	0.68
35C:							
Lily	90	Fair		Poor		Fair	
		Organic matter content low	0.12	Depth to bedrock	0.00	Depth to bedrock	0.35
				Low strength	0.78	Slope	0.37
		Depth to bedrock	0.35			Too acid	0.95
		Too acid	0.50				
35D:							
Lily	90	Fair		Poor		Poor	
		Organic matter content low	0.12	Slope	0.00	Slope	0.00
				Depth to bedrock	0.00	Depth to bedrock	0.35
		Depth to bedrock	0.35	Low strength	0.78	Too acid	0.95
		Too acid	0.50				
35E:							
Lily	90	Fair		Poor		Poor	
		Organic matter content low	0.12	Depth to bedrock	0.00	Slope	0.00
				Slope	0.00	Depth to bedrock	0.35
		Depth to bedrock	0.35	Low strength	0.78	Too acid	0.95
		Too acid	0.50				
36A:							
Lobdell	65	Fair		Fair		Fair	
		Organic matter content low	0.50	Wetness depth	0.53	Wetness depth	0.53
		Too acid	0.97				
		Water erosion	0.99				
Orrville	30	Fair		Poor		Poor	
		Organic matter content low	0.50	Wetness depth	0.00	Wetness depth	0.00
		Too acid	0.92				
		Water erosion	0.99				
37D:							
Mandy	45	Fair		Poor		Poor	
		Organic matter content low	0.12	Depth to bedrock	0.00	Rock fragments	0.00
				Slope	0.08	Slope	0.00
		Droughty	0.33			Too acid	0.59
		Too acid	0.50				
Paddyknob	40	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Rock fragments	0.00
		Organic matter content low	0.12	Slope	0.08	Slope	0.00
						Depth to bedrock	0.21
		Depth to bedrock	0.21				
Rock outcrop	10	Not rated		Not rated		Not rated	

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
38D:							
Marrowbone----------	85	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
						Depth to bedrock	0.79
		Too acid	0.50				
38E:							
Marrowbone----------	85	Poor		Poor		Poor	
		Droughty	0.00	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Depth to bedrock	0.00	Rock fragments	0.00
						Depth to bedrock	0.79
		Too acid	0.50				
38F:							
Marrowbone----------	85	Poor		Poor		Poor	
		Droughty	0.00	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Depth to bedrock	0.00	Rock fragments	0.00
						Depth to bedrock	0.79
		Too acid	0.50				
39D:							
Marrowbone----------	50	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Rock fragments	0.00
		Organic matter content low	0.12	Slope	0.50	Slope	0.00
						Depth to bedrock	0.79
		Too acid	0.50				
Gilpin--------------	45	Poor		Poor		Poor	
		Wind erosion	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.50	Rock fragments	0.00
						Depth to bedrock	0.90
		Too acid	0.50				
39E:							
Marrowbone----------	60	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Rock fragments	0.00
		Organic matter content low	0.12	Slope	0.00	Slope	0.00
						Depth to bedrock	0.79
		Too acid	0.50				
Gilpin--------------	35	Poor		Poor		Poor	
		Wind erosion	0.00	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Depth to bedrock	0.00	Rock fragments	0.00
						Depth to bedrock	0.90
		Too acid	0.50				
39F:							
Marrowbone----------	75	Poor		Poor		Poor	
		Droughty	0.00	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Depth to bedrock	0.00	Rock fragments	0.00
						Depth to bedrock	0.79
		Too acid	0.50				
Gilpin--------------	15	Poor		Poor		Poor	
		Wind erosion	0.00	Depth to bedrock	0.00	Rock fragments	0.00
		Organic matter content low	0.12	Slope	0.00	Slope	0.00
						Depth to bedrock	0.90
		Too acid	0.50				

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
40F:							
Matewan	45	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.02	Slope	0.00	Rock fragments	0.00
				Stone content	0.99	Too acid	0.95
		Too acid	0.50				
Rock outcrop	40	Not rated		Not rated		Not rated	
41A:							
Ogles	90	Poor		Poor		Poor	
		Stone content	0.00	Stone content	0.00	Hard to reclaim (rock fragments)	0.00
		Cobble content	0.17	Cobble content	0.00		
		Too sandy	0.30			Rock fragments	0.00
						Too sandy	0.30
42C:							
Oriskany	75	Fair		Fair		Poor	
		Organic matter content low	0.12	Cobble content	0.37	Rock fragments	0.00
						Hard to reclaim (rock fragments)	0.00
		Too acid	0.50				
		Cobble content	0.99			Slope	0.37
42D:							
Oriskany	75	Fair		Poor		Poor	
		Organic matter content low	0.12	Slope	0.00	Hard to reclaim (rock fragments)	0.00
				Cobble content	0.37		
		Too acid	0.50			Rock fragments	0.00
		Cobble content	0.99			Slope	0.00
42E:							
Oriskany	75	Fair		Poor		Poor	
		Organic matter content low	0.12	Slope	0.00	Hard to reclaim (rock fragments)	0.00
				Cobble content	0.37		
		Too acid	0.50			Rock fragments	0.00
		Cobble content	0.99			Slope	0.00
43:							
Pits, quarry	95	Not rated		Not rated		Not rated	
44C:							
Poplimento	45	Poor		Fair		Poor	
		Too clayey	0.00	Shrink-swell	0.49	Too clayey	0.00
		Organic matter content low	0.02			Slope	0.37
		Too acid	0.50				
Westmoreland	40	Fair		Fair		Poor	
		Organic matter content low	0.12	Low strength	0.22	Hard to reclaim (rock fragments)	0.00
				Depth to bedrock	0.87		
		Too acid	0.50			Slope	0.37
		Water erosion	0.99			Rock fragments	0.88
45F:							
Ramsey	75	Poor		Poor		Poor	
		Depth to bedrock	0.00	Depth to bedrock	0.00	Slope	0.00
		Droughty	0.00	Slope	0.00	Depth to bedrock	0.00
		Organic matter content low	0.12			Too acid	0.88
Rock outcrop	15	Not rated		Not rated		Not rated	

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
46F:							
Rock outcrop	45	Not rated		Not rated		Not rated	
Beech Grove	25	Poor		Poor		Poor	
		Droughty	0.00	Slope	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00	Depth to bedrock	0.00	Rock fragments	0.00
						Slope	0.00
Benthole	25	Fair		Poor		Poor	
		Organic matter content low	0.12	Slope	0.00	Slope	0.00
				Cobble content	0.00	Rock fragments	0.00
		Cobble content	0.62	Low strength	0.78	Hard to reclaim (rock fragments)	0.00
		Stone content	0.97				
47F:							
Sewell	55	Poor		Poor		Poor	
		Droughty	0.00	Slope	0.00	Rock fragments	0.00
		Stone content	0.00	Stone content	0.00	Hard to reclaim (rock fragments)	0.00
		Organic matter content low	0.01				
						Slope	0.00
Kaymine	30	Fair		Poor		Poor	
		Organic matter content low	0.01	Slope	0.00	Slope	0.00
				Cobble content	0.73	Hard to reclaim (rock fragments)	0.00
		Stone content	0.37	Stone content	0.99		
						Rock fragments	0.00
Rock outcrop	10	Not rated		Not rated		Not rated	
48E:							
Shelocta	70	Fair		Poor		Poor	
		Organic matter content low	0.02	Slope	0.00	Slope	0.00
						Hard to reclaim (rock fragments)	0.00
		Too acid	0.32				
						Rock fragments	0.00
Cedarcreek	25	Fair		Poor		Poor	
		Organic matter content low	0.01	Slope	0.00	Slope	0.00
				Stone content	0.68	Rock fragments	0.00
		Droughty	0.14			Hard to reclaim (rock fragments)	0.00
		Too acid	0.50				
49E:							
Shelocta	50	Fair		Poor		Poor	
		Organic matter content low	0.02	Slope	0.00	Slope	0.00
						Hard to reclaim (rock fragments)	0.00
		Too acid	0.32				
						Rock fragments	0.00
Highsplint	40	Fair		Poor		Poor	
		Too acid	0.16	Slope	0.00	Slope	0.00
		Organic matter content low	0.50	Cobble content	0.79	Hard to reclaim (rock fragments)	0.00
						Rock fragments	0.00

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
50F:							
Shelocta	55	Fair		Poor		Poor	
		Organic matter content low	0.02	Slope	0.00	Rock fragments	0.00
		Too acid	0.32			Hard to reclaim (rock fragments)	0.00
						Slope	0.00
Kaymine	40	Fair		Poor		Poor	
		Organic matter content low	0.01	Slope	0.00	Hard to reclaim (rock fragments)	0.00
		Stone content	0.37	Cobble content	0.73	Rock fragments	0.00
				Stone content	0.99	Slope	0.00
51F:							
Stonecoal	85	Poor		Poor		Poor	
		Droughty	0.00	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.12	Cobble content	0.13	Hard to reclaim (rock fragments)	0.00
		Cobble content	0.92			Slope	0.00
52C:							
Tumbling	85	Poor		Fair		Poor	
		Too clayey	0.00	Low strength	0.10	Hard to reclaim (rock fragments)	0.00
		Organic matter content low	0.00			Too clayey	0.00
		Too acid	0.61			Slope	0.37
52D:							
Tumbling	80	Poor		Fair		Poor	
		Too clayey	0.00	Low strength	0.10	Hard to reclaim (rock fragments)	0.00
		Organic matter content low	0.00	Slope	0.50	Too clayey	0.00
		Too acid	0.61			Slope	0.00
53E:							
Tumbling	85	Poor		Poor		Poor	
		Organic matter content low	0.00	Slope	0.00	Hard to reclaim (rock fragments)	0.00
		Too clayey	0.00	Low strength	0.10	Too clayey	0.00
		Too acid	0.61			Slope	0.00
54F:							
Udorthents	45	Not rated		Not rated		Not rated	
Urban land	30	Not rated		Not rated		Not rated	
55D:							
Wallen	90	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.10	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.12	No cobble limitation	0.99	Depth to bedrock	0.10
55F:							
Wallen	90	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.10	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.12	No cobble limitation	0.99	Depth to bedrock	0.10

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
56D:							
Wallen-------------	65	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.10	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.12	No cobble limitation	0.99	Depth to bedrock	0.10
Rock outcrop--------	25	Not rated		Not rated		Not rated	
56F:							
Wallen-------------	65	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.10	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.12	No cobble limitation	0.99	Depth to bedrock	0.10
Rock outcrop--------	25	Not rated		Not rated		Not rated	
57C:							
Watahala-----------	95	Fair		Good		Poor	
		Too acid	0.08			Rock fragments	0.00
		Organic matter content low	0.18			Hard to reclaim (rock fragments)	0.32
		Droughty	0.33			Slope	0.37
57D:							
Watahala-----------	95	Fair		Fair		Poor	
		Too acid	0.08	Slope	0.50	Slope	0.00
		Organic matter content low	0.18			Rock fragments	0.00
		Droughty	0.33			Hard to reclaim (rock fragments)	0.32
57E:							
Watahala-----------	95	Fair		Poor		Poor	
		Too acid	0.08	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.18			Slope	0.00
		Droughty	0.33			Hard to reclaim (rock fragments)	0.32
57F:							
Watahala-----------	90	Fair		Poor		Poor	
		Too acid	0.08	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.18			Slope	0.00
		Droughty	0.33			Hard to reclaim (rock fragments)	0.32
58D:							
Watahala-----------	95	Fair		Fair		Poor	
		Too acid	0.08	Slope	0.50	Slope	0.00
		Organic matter content low	0.18			Rock fragments	0.00
		Droughty	0.33			Hard to reclaim (rock fragments)	0.32
58E:							
Watahala-----------	95	Fair		Poor		Poor	
		Too acid	0.08	Slope	0.00	Slope	0.00
		Organic matter content low	0.18			Rock fragments	0.00
		Droughty	0.33			Hard to reclaim	0.32
						(rock fragments)	0.32

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
59D:							
Wharton	45	Fair		Poor		Poor	
		Too acid	0.20	Low strength	0.00	Slope	0.00
		Organic matter content low	0.50	Wetness depth	0.20	Wetness depth	0.20
		Water erosion	0.68	Slope	0.68	Too acid	0.76
Gilpin	40	Poor		Poor		Poor	
		Wind erosion	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.50	Rock fragments	0.00
		Too acid	0.50			Depth to bedrock	0.90
Berks	15	Fair		Poor		Poor	
		Droughty	0.08	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.50	Rock fragments	0.00
		Too acid	0.50			Depth to bedrock	0.84
60C:							
Wharton	45	Fair		Poor		Fair	
		Too acid	0.20	Low strength	0.00	Wetness depth	0.20
		Organic matter content low	0.50	Wetness depth	0.20	Too acid	0.76
		Water erosion	0.68			Slope	0.84
Gilpin	35	Poor		Poor		Poor	
		Wind erosion	0.00	Depth to bedrock	0.00	Rock fragments	0.00
		Organic matter content low	0.12			Slope	0.84
		Too acid	0.50			Depth to bedrock	0.90
Marrowbone	20	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Rock fragments	0.00
		Organic matter content low	0.12			Depth to bedrock	0.79
		Too acid	0.50			Slope	0.84
61B:							
Wyrick	55	Fair		Fair		Fair	
		Organic matter content low	0.12	Low strength	0.22	Rock fragments	0.88
		Too acid	0.50	Shrink-swell	0.94	Too acid	0.88
Marbie	40	Fair		Poor		Fair	
		Too acid	0.08	Depth to cemented pan	0.00	Wetness depth	0.53
		Organic matter content low	0.12	Wetness depth	0.53	Rock fragments	0.88
		Water erosion	0.90	Low strength	0.78	Hard to reclaim (dense layer)	0.94
61C:							
Wyrick	55	Fair		Fair		Fair	
		Organic matter content low	0.12	Low strength	0.22	Slope	0.37
		Too acid	0.50	Shrink-swell	0.94	Rock fragments	0.88
						Too acid	0.88

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
61C:							
Marbie	40	Fair		Poor		Fair	
		Too acid	0.08	Depth to cemented pan	0.00	Slope	0.37
		Organic matter content low	0.12	Wetness depth	0.53	Wetness depth	0.53
		Water erosion	0.90	Low strength	0.78	Rock fragments	0.88
W:							
Water	100	Not rated		Not rated		Not rated	

Table 14.—Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
1E:							
Berks	50	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.56	Depth to water	1.00
		Slope	1.00	Seepage	0.25		
		Depth to bedrock	0.56				
Chiswell	40	Somewhat limited		Very limited		Very limited	
		Slope	0.97	Thin layer	1.00	Depth to water	1.00
		Depth to bedrock	0.78	Seepage	0.12		
		Seepage	0.70				
1F:							
Berks	45	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.56	Depth to water	1.00
		Slope	1.00	Seepage	0.25		
		Depth to bedrock	0.56				
Chiswell	45	Very limited		Very limited		Very limited	
		Slope	1.00	Thin layer	1.00	Depth to water	1.00
		Depth to bedrock	0.78	Seepage	0.12		
		Seepage	0.70				
2D:							
Berks	45	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.56	Depth to water	1.00
		Depth to bedrock	0.56	Seepage	0.25		
		Slope	0.28				
Gilpin	40	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Piping	0.99	Depth to water	1.00
		Slope	0.28	Thin layer	0.83		
		Depth to bedrock	0.09				
2E:							
Berks	45	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.56	Depth to water	1.00
		Slope	0.97	Seepage	0.25		
		Depth to bedrock	0.56				
Gilpin	40	Somewhat limited		Very limited		Very limited	
		Slope	0.97	Piping	0.99	Depth to water	1.00
		Seepage	0.70	Thin layer	0.83		
		Depth to bedrock	0.09				
2F:							
Berks	45	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.56	Depth to water	1.00
		Slope	1.00	Seepage	0.25		
		Depth to bedrock	0.56				
Gilpin	40	Very limited		Very limited		Very limited	
		Slope	1.00	Piping	0.99	Depth to water	1.00
		Seepage	0.70	Thin layer	0.83		
		Depth to bedrock	0.09				

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
3C:							
Berks---------------	55	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.56	Depth to water	1.00
		Slope	1.00	Seepage	0.25		
		Depth to bedrock	0.56				
Groseclose----------	40	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.01	Piping	0.31	Depth to water	1.00
3D:							
Berks---------------	55	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.56	Depth to water	1.00
		Slope	1.00	Seepage	0.25		
		Depth to bedrock	0.56				
Groseclose----------	40	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.28	Piping	0.31	Depth to water	1.00
4D:							
Berks---------------	50	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.56	Depth to water	1.00
		Depth to bedrock	0.56	Seepage	0.25		
		Slope	0.28				
Poplimento----------	40	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.28	Piping	0.18	Depth to water	1.00
		Seepage	0.03				
5C:							
Berks---------------	45	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.56	Depth to water	1.00
		Depth to bedrock	0.56	Seepage	0.25		
		Slope	0.01				
Weikert-------------	45	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Seepage	0.70	Seepage	0.38		
		Slope	0.01				
5D:							
Berks---------------	45	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.56	Depth to water	1.00
		Depth to bedrock	0.56	Seepage	0.25		
		Slope	0.28				
Weikert-------------	45	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Seepage	0.70	Seepage	0.38		
		Slope	0.28				
5E:							
Berks---------------	65	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.56	Depth to water	1.00
		Slope	0.97	Seepage	0.25		
		Depth to bedrock	0.56				
Weikert-------------	25	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	0.97	Seepage	0.38		
		Seepage	0.70				

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
5F:							
Berks	60	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.56	Depth to water	1.00
		Slope	1.00	Seepage	0.25		
		Depth to bedrock	0.56				
Weikert	30	Very limited		Very limited		Very limited	
		Slope	1.00	Thin layer	1.00	Depth to water	1.00
		Depth to bedrock	1.00	Seepage	0.38		
		Seepage	0.70				
6E:							
Berks	55	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.56	Depth to water	1.00
		Slope	0.97	Seepage	0.25		
		Depth to bedrock	0.56				
Westmoreland	35	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.97	Piping	0.97	Depth to water	1.00
		Seepage	0.70	Thin layer	0.03		
		Depth to bedrock	0.03				
6F:							
Berks	65	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.56	Depth to water	1.00
		Slope	1.00	Seepage	0.25		
		Depth to bedrock	0.56				
Westmoreland	30	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.97	Depth to water	1.00
		Seepage	0.70	Thin layer	0.03		
		Depth to bedrock	0.03				
7E:							
Bland	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.79	Hard to pack	0.87	Depth to water	1.00
		Depth to bedrock	0.66	Thin layer	0.66		
		Seepage	0.03				
8D:							
Bland	80	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.66	Hard to pack	0.87	Depth to water	1.00
		Slope	0.06	Thin layer	0.66		
		Seepage	0.03				
Rock outcrop	15	Not rated		Not rated		Not rated	
8E:							
Bland	80	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.82	Hard to pack	0.87	Depth to water	1.00
		Depth to bedrock	0.66	Thin layer	0.66		
		Seepage	0.03				
Rock outcrop	15	Not rated		Not rated		Not rated	
9D:							
Bland	80	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.66	Hard to pack	0.87	Depth to water	1.00
		Slope	0.18	Thin layer	0.66		
		Seepage	0.03				

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
9D:							
Rock outcrop	15	Not rated		Not rated		Not rated	
10D:							
Calvin	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.86	Depth to water	1.00
		Depth to bedrock	0.86				
		Slope	0.28				
11F:							
Calvin	70	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.86	Depth to water	1.00
		Slope	1.00				
		Depth to bedrock	0.86				
Rough	20	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	1.00	Seepage	0.25		
12C:							
Carbo	50	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.88	Hard to pack	1.00	Depth to water	1.00
		Slope	0.01	Thin layer	0.88		
Beech Grove	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	0.01				
12D:							
Carbo	60	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.88	Hard to pack	1.00	Depth to water	1.00
		Slope	0.12	Thin layer	0.88		
Beech Grove	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	0.12				
12E:							
Carbo	60	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.88	Hard to pack	1.00	Depth to water	1.00
		Slope	0.50	Thin layer	0.88		
Beech Grove	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	0.50				
12F:							
Carbo	60	Very limited		Very limited		Very limited	
		Slope	1.00	Hard to pack	1.00	Depth to water	1.00
		Depth to bedrock	0.88	Thin layer	0.88		
Beech Grove	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	1.00				
13C:							
Carbo	35	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.88	Hard to pack	1.00	Depth to water	1.00
				Thin layer	0.88		

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
13C:							
Frederick-----------	34	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.09	Depth to water	1.00
Urban land----------	30	Not rated		Not rated		Not rated	
14D:							
Carbo---------------	60	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.88	Hard to pack	1.00	Depth to water	1.00
		Slope	0.12	Thin layer	0.88		
Rock outcrop--------	15	Not rated		Not rated		Not rated	
14E:							
Carbo---------------	80	Somewhat limited		Very limited		Very limited	
		Slope	0.97	Hard to pack	1.00	Depth to water	1.00
		Depth to bedrock	0.88	Thin layer	0.88		
Rock outcrop--------	15	Not rated		Not rated		Not rated	
15D:							
Carbo---------------	60	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.88	Hard to pack	1.00	Depth to water	1.00
		Slope	0.12	Thin layer	0.88		
Rock outcrop--------	30	Not rated		Not rated		Not rated	
16C:							
Cedarcreek----------	35	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.57	Seepage	0.12	Depth to water	1.00
Sewell--------------	30	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.12	Depth to water	1.00
				Large stones content	0.10		
Rock outcrop--------	10	Not rated		Not rated		Not rated	
17A:							
Chagrin-------------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Seepage	0.70	Seepage	0.03	Depth to saturated zone	0.81
						Slow refill	0.30
						Cutbanks cave	0.10
18:							
Dumps, mine---------	85	Not rated		Not rated		Not rated	
Urban land----------	15	Not rated		Not rated		Not rated	
19C:							
Frederick-----------	95	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.09	Depth to water	1.00
		Slope	0.01				
19D:							
Frederick-----------	95	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.09	Depth to water	1.00
		Slope	0.12				

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
19E:							
Frederick-----------	95	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.09	Depth to water	1.00
		Slope	0.50				
19F:							
Frederick-----------	95	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.99	Hard to pack	0.09	Depth to water	1.00
		Seepage	0.70				
20C:							
Frederick-----------	95	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.09	Depth to water	1.00
		Slope	0.01				
20D:							
Frederick-----------	95	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.09	Depth to water	1.00
		Slope	0.12				
21C:							
Frederick-----------	95	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.11	Depth to water	1.00
		Slope	0.01				
21D:							
Frederick-----------	95	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.11	Depth to water	1.00
		Slope	0.12				
21E:							
Frederick-----------	95	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.11	Depth to water	1.00
		Slope	0.50				
21F:							
Frederick-----------	95	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.99	Hard to pack	0.11	Depth to water	1.00
		Seepage	0.70				
22C:							
Frederick-----------	95	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.11	Depth to water	1.00
		Slope	0.01				
22D:							
Frederick-----------	95	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.11	Depth to water	1.00
		Slope	0.12				
23D:							
Gilpin--------------	90	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Piping	0.99	Depth to water	1.00
		Slope	0.28	Thin layer	0.83		
		Depth to bedrock	0.09				

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
24D:							
Gilpin	55	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Thin layer	0.70	Depth to water	1.00
		Depth to bedrock	0.52				
		Slope	0.50				
Berks	30	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.74	Depth to water	1.00
		Depth to bedrock	0.66	Seepage	0.25		
		Slope	0.50				
24F:							
Gilpin	55	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Thin layer	0.70	Depth to water	1.00
		Seepage	0.70				
		Depth to bedrock	0.52				
Berks	35	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.74	Depth to water	1.00
		Slope	1.00	Seepage	0.25		
		Depth to bedrock	0.66				
25E:							
Gilpin	65	Somewhat limited		Very limited		Very limited	
		Slope	0.97	Piping	0.99	Depth to water	1.00
		Seepage	0.70	Thin layer	0.83		
		Depth to bedrock	0.09				
Shelocta	30	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.97	Piping	0.55	Depth to water	1.00
		Seepage	0.70	Seepage	0.25		
26F:							
Gilpin	60	Very limited		Very limited		Very limited	
		Slope	1.00	Piping	0.99	Depth to water	1.00
		Seepage	0.70	Thin layer	0.83		
		Depth to bedrock	0.09				
Shelocta	35	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.55	Depth to water	1.00
		Seepage	0.70	Seepage	0.25		
27A:							
Grigsby	95	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.03	Depth to water	1.00
28C:							
Highsplint	90	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Large stones content	0.01	Depth to water	1.00
		Slope	0.01				
28D:							
Highsplint	90	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Large stones content	0.01	Depth to water	1.00
		Slope	0.28				
29F:							
Highsplint	55	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Large stones content	0.01	Depth to water	1.00
		Slope	1.00				

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
29F:							
Shelocta	40	Very limited		Not limited		Very limited	
		Slope	1.00			Depth to water	1.00
		Seepage	0.70				
30A:							
Holly	97	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Ponding	1.00	Cutbanks cave	0.10
				Depth to saturated zone	1.00		
				Piping	0.98		
31D:							
Kaymine	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.57	Large stones content	0.03	Depth to water	1.00
		Slope	0.28				
32E:							
Kaymine	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.97	Large stones content	0.03	Depth to water	1.00
		Seepage	0.57				
Cedarcreek	15	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.97	Seepage	0.12	Depth to water	1.00
		Seepage	0.57				
33F:							
Kaymine	50	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Large stones content	0.03	Depth to water	1.00
		Seepage	0.57				
Fiveblock	45	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.12	Depth to water	1.00
		Slope	1.00	Large stones content	0.05		
34C:							
Kaymine	55	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.57	Large stones content	0.03	Depth to water	1.00
Fiveblock	25	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.12	Depth to water	1.00
				Large stones content	0.05		
Cedadrcreek	20	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.57	Seepage	0.12	Depth to water	1.00
35C:							
Lily	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	0.99	Depth to water	1.00
		Depth to bedrock	0.91	Thin layer	0.91		
		Slope	0.01	Seepage	0.03		
35D:							
Lily	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	0.99	Depth to water	1.00
		Depth to bedrock	0.91	Thin layer	0.91		
		Slope	0.28	Seepage	0.03		

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
35E:							
Lily----------------	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	0.99	Depth to water	1.00
		Slope	0.97	Thin layer	0.91		
		Depth to bedrock	0.91	Seepage	0.03		
36A:							
Lobdell-------------	65	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Piping	1.00	Cutbanks cave	0.10
				Depth to saturated zone	0.99	Depth to saturated zone	0.01
Orrville------------	30	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
				Piping	1.00		
				Seepage	0.03		
37D:							
Mandy---------------	45	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Thin layer	0.61	Depth to water	1.00
		Slope	0.21	Seepage	0.15		
		Depth to bedrock	0.02				
Paddyknob-----------	40	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.95	Depth to water	1.00
		Depth to bedrock	0.95	Seepage	0.04		
		Slope	0.21				
Rock outcrop--------	10	Not rated		Not rated		Not rated	
38D:							
Marrowbone----------	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.77	Depth to water	1.00
		Slope	0.28	Seepage	0.07		
		Depth to bedrock	0.26				
38E:							
Marrowbone----------	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.77	Depth to water	1.00
		Slope	0.97	Seepage	0.07		
		Depth to bedrock	0.26				
38F:							
Marrowbone----------	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.77	Depth to water	1.00
		Slope	1.00	Seepage	0.07		
		Depth to bedrock	0.26				
39D:							
Marrowbone----------	50	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.77	Depth to water	1.00
		Depth to bedrock	0.26	Seepage	0.07		
		Slope	0.12				
Gilpin--------------	45	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Thin layer	0.70	Depth to water	1.00
		Depth to bedrock	0.52				
		Slope	0.12				

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
39E:							
Marrowbone----------	60	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.77	Depth to water	1.00
		Slope	0.50	Seepage	0.07		
		Depth to bedrock	0.26				
Gilpin--------------	35	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Thin layer	0.70	Depth to water	1.00
		Depth to bedrock	0.52				
		Slope	0.50				
39F:							
Marrowbone----------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.77	Depth to water	1.00
		Slope	1.00	Seepage	0.07		
		Depth to bedrock	0.26				
Gilpin--------------	15	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Thin layer	0.70	Depth to water	1.00
		Seepage	0.70				
		Depth to bedrock	0.52				
40F:							
Matewan-------------	45	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.56	Depth to water	1.00
		Slope	1.00	Seepage	0.03		
		Depth to bedrock	0.56				
Rock outcrop--------	40	Not rated		Not rated		Not rated	
41A:							
Ogles---------------	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Large stones content	1.00	Cutbanks cave	1.00
				Depth to saturated zone	0.09	Large stones content	1.00
				Seepage	0.08	Depth to saturated zone	0.54
42C:							
Oriskany------------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Large stones content	0.01	Depth to water	1.00
		Slope	0.01				
42D:							
Oriskany------------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Large stones content	0.01	Depth to water	1.00
		Slope	0.28				
42E:							
Oriskany------------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Large stones content	0.01	Depth to water	1.00
		Slope	0.97				
43:							
Pits, quarry--------	95	Not rated		Not rated		Not rated	

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
44C:							
Poplimento----------	45	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.03	Piping	0.18	Depth to water	1.00
		Slope	0.01				
Westmoreland--------	40	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.97	Depth to water	1.00
		Depth to bedrock	0.03	Thin layer	0.03		
		Slope	0.01				
45F:							
Ramsey--------------	75	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	1.00	Seepage	0.03		
Rock outcrop--------	15	Not rated		Not rated		Not rated	
46F:							
Rock outcrop--------	45	Not rated		Not rated		Not rated	
Beech Grove---------	25	Very limited		Very limited		Very limited	
		Slope	1.00	Thin layer	1.00	Depth to water	1.00
		Depth to bedrock	1.00				
Benthole------------	25	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Large stones content	0.49	Depth to water	1.00
		Seepage	0.73				
				Piping	0.37		
47F:							
Sewell--------------	55	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.12	Depth to water	1.00
		Slope	0.97	Large stones content	0.10		
Kaymine-------------	30	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.97	Large stones content	0.03	Depth to water	1.00
		Seepage	0.57				
Rock outcrop--------	10	Not rated		Not rated		Not rated	
48E:							
Shelocta------------	70	Somewhat limited		Not limited		Very limited	
		Slope	0.97			Depth to water	1.00
		Seepage	0.70				
Cedarcreek----------	25	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.97	Seepage	0.12	Depth to water	1.00
		Seepage	0.57				
49E:							
Shelocta------------	50	Somewhat limited		Not limited		Very limited	
		Slope	0.97			Depth to water	1.00
		Seepage	0.70				
Highsplint----------	40	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Large stones content	0.01	Depth to water	1.00
		Slope	0.97				

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50F:							
Shelocta------------	55	Very limited		Not limited		Very limited	
		Slope	1.00			Depth to water	1.00
		Seepage	0.70				
Kaymine-------------	40	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Large stones content	0.03	Depth to water	1.00
		Seepage	0.57				
51F:							
Stonecoal-----------	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.38	Depth to water	1.00
		Slope	0.88	Large stones content	0.08		
52C:							
Tumbling------------	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.67	Depth to water	1.00
		Slope	0.01				
52D:							
Tumbling------------	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.67	Depth to water	1.00
		Slope	0.12				
53E:							
Tumbling------------	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.72	Piping	0.67	Depth to water	1.00
		Seepage	0.70				
54F:							
Udorthents----------	45	Not rated		Not rated		Not rated	
Urban land----------	30	Not rated		Not rated		Not rated	
55D:							
Wallen--------------	90	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.98	Depth to water	1.00
		Depth to bedrock	0.98	Seepage	0.03		
		Slope	0.28				
55F:							
Wallen--------------	90	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.98	Depth to water	1.00
		Slope	1.00	Seepage	0.03		
		Depth to bedrock	0.98				
56D:							
Wallen--------------	65	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.98	Depth to water	1.00
		Depth to bedrock	0.98	Seepage	0.03		
		Slope	0.28				
Rock outcrop--------	25	Not rated		Not rated		Not rated	
56F:							
Wallen--------------	65	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.98	Depth to water	1.00
		Slope	1.00	Seepage	0.03		
		Depth to bedrock	0.98				

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
56F:							
Rock outcrop	25	Not rated		Not rated		Not rated	
57C:							
Watahala	95	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.37	Depth to water	1.00
		Slope	0.01				
57D:							
Watahala	95	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.37	Depth to water	1.00
		Slope	0.12				
57E:							
Watahala	95	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.37	Depth to water	1.00
		Slope	0.50				
57F:							
Watahala	90	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.37	Depth to water	1.00
		Slope	0.97				
58D:							
Watahala	95	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.37	Depth to water	1.00
		Slope	0.12				
58E:							
Watahala	95	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.37	Depth to water	1.00
		Slope	0.50				
59D:							
Wharton	45	Somewhat limited		Very limited		Very limited	
		Slope	0.10	Depth to saturated zone	1.00	Depth to water	1.00
		Seepage	0.01	Piping	1.00		
Gilpin	40	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Thin layer	0.70	Depth to water	1.00
		Depth to bedrock	0.52				
		Slope	0.12				
Berks	15	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.74	Depth to water	1.00
		Depth to bedrock	0.66	Seepage	0.25		
		Slope	0.12				
60C:							
Wharton	45	Somewhat limited		Very limited		Very limited	
		Seepage	0.01	Depth to saturated zone	1.00	Depth to water	1.00
				Piping	1.00		
Gilpin	35	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Thin layer	0.70	Depth to water	1.00
		Depth to bedrock	0.52				

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60C:							
Marrowbone----------	20	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.77	Depth to water	1.00
		Depth to bedrock	0.26	Seepage	0.07		
61B:							
Wyrick--------------	55	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.96	Depth to water	1.00
Marbie--------------	40	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	0.99	Depth to water	1.00
		Depth to cemented pan	0.66	Piping	0.96		
				Thin layer	0.66		
61C:							
Wyrick--------------	55	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.96	Depth to water	1.00
		Slope	0.01				
Marbie--------------	40	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	0.99	Depth to water	1.00
		Depth to cemented pan	0.66	Piping	0.96		
		Slope	0.01	Thin layer	0.66		
W:							
Water---------------	100	Not rated		Not rated		Not rated	

Table 15.—Engineering Properties

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
1E:												
Berks-----------	0-6	Channery silt loam	CL, ML, CL-ML, SC, SC-SM	A-4	0	0-5	65-80	55-75	50-75	40-65	16-31	3-11
	6-22	Very channery silt loam, extremely channery loam, channery silty clay loam	SC, CL, CL-ML, GC, GC-GM	A-4, A-2-4, A-6, A-1	0	0-10	45-80	25-75	20-75	15-70	16-36	3-14
	22-32	Very channery silt loam, extremely channery loam, very channery silty clay loam	SC, GC-GM, GC	A-4, A-2-4, A-6, A-1	0	1-10	45-60	25-50	20-50	15-45	16-36	3-14
	32-38	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, GM, GC	A-1, A-2-4	0	3-10	35-50	15-35	15-35	10-30	12-25	1-8
	38-48	Bedrock			---	---	---	---	---	---	---	---
Chiswell--------	0-2	Very channery silt loam	GC-GM, GC	A-2-4, A-1, A-4	0	0-10	45-60	30-50	25-50	20-45	16-30	3-11
	2-7	Very channery silt loam, channery silt loam, extremely channery loam	SC-SM, SC, GW-GC, GC, GC-GM, CL, CL-ML	A-2-4, A-1, A-4	0	1-10	35-75	15-70	10-65	10-60	16-30	3-11
	7-12	Very channery silt loam, extremely channery loam	GC-GM, GC, GW-GC, GM	A-2-4, A-1	0	3-10	30-50	6-40	5-40	5-35	12-30	1-11
	12-22	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
1F:												
Berks-----------	0-6	Channery silt loam	CL, ML, CL-ML, SC, SC-SM	A-4	0	0-5	65-80	55-75	50-75	40-65	16-31	3-11
	6-22	Very channery silt loam, extremely channery loam, channery silty clay loam	SC, CL, CL-ML, GC, GC-GM	A-4, A-2-4, A-6, A-1	0	0-10	45-80	25-75	20-75	15-70	16-36	3-14
	22-32	Very channery silt loam, extremely channery loam, very channery silty clay loam	SC, GC-GM, GC	A-4, A-2-4, A-6, A-1	0	1-10	45-60	25-50	20-50	15-45	16-36	3-14
	32-38	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, GM, GC	A-1, A-2-4	0	3-10	35-50	15-35	15-35	10-30	12-25	1-8
	38-48	Bedrock			---	---	---	---	---	---	---	---
Chiswell--------	0-2	Very channery silt loam	GC-GM, GC	A-2-4, A-1, A-4	0	0-10	45-60	30-50	25-50	20-45	16-30	3-11
	2-7	Very channery silt loam, channery silt loam, extremely channery loam	SC-SM, SC, GW-GC, GC, GC-GM, CL, CL-ML	A-2-4, A-1, A-4	0	1-10	35-75	15-70	10-65	10-60	16-30	3-11
	7-12	Very channery silt loam, extremely channery loam	GC-GM, GC, GW-GC, GM	A-2-4, A-1	0	3-10	30-50	6-40	5-40	5-35	12-30	1-11
	12-22	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
2D:												
Berks-----------	0-6	Channery silt loam	CL, ML, CL-ML, SC, SC-SM	A-4	0	0-5	65-80	55-75	50-75	40-65	16-31	3-11
	6-22	Very channery silt loam, extremely channery loam, channery silty clay loam	SC, CL, CL-ML, GC, GC-GM	A-4, A-2-4, A-6, A-1	0	0-10	45-80	25-75	20-75	15-70	16-36	3-14
	22-32	Very channery silt loam, extremely channery loam, very channery silty clay loam	SC, GC-GM, GC	A-4, A-2-4, A-6, A-1	0	1-10	45-60	25-50	20-50	15-45	16-36	3-14
	32-38	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, GM, GC	A-1, A-2-4	0	3-10	35-50	15-35	15-35	10-30	12-25	1-8
	38-48	Bedrock			---	---	---	---	---	---	---	---
Gilpin----------	0-3	Silt loam	CL, CL-ML	A-4	0	0-3	80-95	75-95	70-90	55-80	21-31	6-11
	3-7	Silt loam, loam	CL, CL-ML	A-4	0	0-3	80-95	75-95	65-90	45-80	21-31	6-11
	7-31	Silty clay loam, channery silt loam, channery loam	CL, SC	A-6, A-4	0	0-5	65-92	60-90	50-90	35-85	23-39	7-16
	31-41	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
2E:												
Berks-----------	0-6	Channery silt loam	CL, ML, CL-ML, SC, SC-SM	A-4	0	0-5	65-80	55-75	50-75	40-65	16-31	3-11
	6-22	Very channery silt loam, extremely channery loam, channery silty clay loam	SC, CL, CL-ML, GC, GC-GM	A-4, A-2-4, A-6, A-1	0	0-10	45-80	25-75	20-75	15-70	16-36	3-14
	22-32	Very channery silt loam, extremely channery loam, very channery silty clay loam	SC, GC-GM, GC	A-4, A-2-4, A-6, A-1	0	1-10	45-60	25-50	20-50	15-45	16-36	3-14
	32-38	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, GM, GC	A-1, A-2-4	0	3-10	35-50	15-35	15-35	10-30	12-25	1-8
	38-48	Bedrock			---	---	---	---	---	---	---	---
Gilpin----------	0-3	Silt loam	CL, CL-ML	A-4	0	0-3	80-95	75-95	70-90	55-80	21-31	6-11
	3-7	Silt loam, loam	CL, CL-ML	A-4	0	0-3	80-95	75-95	65-90	45-80	21-31	6-11
	7-31	Silty clay loam, channery silt loam, channery loam	CL, SC	A-6, A-4	0	0-5	65-92	60-90	50-90	35-85	23-39	7-16
	31-41	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
2F:												
Berks-----------	0-6	Channery silt loam	CL, ML, CL-ML, SC, SC-SM	A-4	0	0-5	65-80	55-75	50-75	40-65	16-31	3-11
	6-22	Very channery silt loam, extremely channery loam, channery silty clay loam	SC, CL, CL-ML, GC, GC-GM	A-4, A-2-4, A-6, A-1	0	0-10	45-80	25-75	20-75	15-70	16-36	3-14
	22-32	Very channery silt loam, extremely channery loam, very channery silty clay loam	SC, GC-GM, GC	A-4, A-2-4, A-6, A-1	0	1-10	45-60	25-50	20-50	15-45	16-36	3-14
	32-38	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, GM, GC	A-1, A-2-4	0	3-10	35-50	15-35	15-35	10-30	12-25	1-8
	38-48	Bedrock			---	---	---	---	---	---	---	---
Gilpin----------	0-3	Silt loam	CL, CL-ML	A-4	0	0-3	80-95	75-95	70-90	55-80	21-31	6-11
	3-7	Silt loam, loam	CL, CL-ML	A-4	0	0-3	80-95	75-95	65-90	45-80	21-31	6-11
	7-31	Silty clay loam, channery silt loam, channery loam	CL, SC	A-6, A-4	0	0-5	65-92	60-90	50-90	35-85	23-39	7-16
	31-41	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
3C:												
Berks	0-6	Channery silt loam	CL, ML, CL-ML, SC, SC-SM	A-4	0	0-5	65-80	55-75	50-75	40-65	16-31	3-11
	6-22	Very channery silt loam, extremely channery loam, channery silty clay loam	SC, CL, CL-ML, GC, GC-GM	A-4, A-2-4, A-6, A-1	0	0-10	45-80	25-75	20-75	15-70	16-36	3-14
	22-32	Very channery silt loam, extremely channery loam, very channery silty clay loam	SC, GC-GM, GC	A-4, A-2-4, A-6, A-1	0	1-10	45-60	25-50	20-50	15-45	16-36	3-14
	32-38	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, GM, GC	A-1, A-2-4	0	3-10	35-50	15-35	15-35	10-30	12-25	1-8
	38-48	Bedrock			---	---	---	---	---	---	---	---
Groseclose	0-10	Silty clay loam	CL	A-6, A-7-6	0	0-1	95-100	90-100	85-100	80-95	31-43	11-18
	10-33	Silty clay loam, clay	ML, MH, CL, CH	A-7	0	0-1	95-100	90-100	85-100	70-95	39-61	16-28
	33-62	Channery silt loam, silty clay loam	SC, SC-SM, CL, CL-ML	A-6, A-4, A-7-6	0	0-5	65-100	55-100	50-100	35-95	21-43	6-18

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
3D:												
Berks-----------	0-6	Channery silt loam	CL, ML, CL-ML, SC, SC-SM	A-4	0	0-5	65-80	55-75	50-75	40-65	16-31	3-11
	6-22	Very channery silt loam, extremely channery loam, channery silty clay loam	SC, CL, CL-ML, GC, GC-GM	A-4, A-2-4, A-6, A-1	0	0-10	45-80	25-75	20-75	15-70	16-36	3-14
	22-32	Very channery silt loam, extremely channery loam, very channery silty clay loam	SC, GC-GM, GC	A-4, A-2-4, A-6, A-1	0	1-10	45-60	25-50	20-50	15-45	16-36	3-14
	32-38	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, GM, GC	A-1, A-2-4	0	3-10	35-50	15-35	15-35	10-30	12-25	1-8
	38-48	Bedrock			---	---	---	---	---	---	---	---
Groseclose------	0-10	Silty clay loam	CL	A-6, A-7-6	0	0-1	95-100	90-100	85-100	80-95	31-43	11-18
	10-33	Silty clay loam, clay	ML, MH, CL, CH	A-7	0	0-1	95-100	90-100	85-100	70-95	39-61	16-28
	33-62	Channery silt loam, silty clay loam	SC, SC-SM, CL, CL-ML	A-6, A-4, A-7-6	0	0-5	65-100	55-100	50-100	35-95	21-43	6-18

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
4D:												
Berks-----------	0-6	Channery silt loam	CL, ML, CL-ML, SC, SC-SM	A-4	0	0-5	65-80	55-75	50-75	40-65	16-31	3-11
	6-22	Very channery silt loam, extremely channery loam, channery silty clay loam	SC, CL, CL-ML, GC, GC-GM	A-4, A-2-4, A-6, A-1	0	0-10	45-80	25-75	20-75	15-70	16-36	3-14
	22-32	Very channery silt loam, extremely channery loam, very channery silty clay loam	SC, GC-GM, GC	A-4, A-2-4, A-6, A-1	0	1-10	45-60	25-50	20-50	15-45	16-36	3-14
	32-38	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, GM, GC	A-1, A-2-4	0	3-10	35-50	15-35	15-35	10-30	12-25	1-8
	38-48	Bedrock			---	---	---	---	---	---	---	---
Poplimento------	0-5	Silty clay loam	CL	A-6	0	0-5	85-100	80-100	75-100	70-95	31-43	11-18
	5-20	Silty clay, clay, silty clay loam	CL, ML, CH, MH	A-7	0	0-5	85-100	80-100	75-100	60-95	39-61	16-28
	20-35	Silty clay, channery clay, very channery silty clay loam	CL, CH, MH, ML, SM, SC	A-7, A-2-7	0	0-10	50-100	35-100	35-100	30-95	39-61	16-28
	35-60	Silty clay loam, channery silty clay, very channery silty clay loam	CL, SC	A-6, A-7, A-2-6	0	0-15	50-100	35-100	35-100	30-95	31-52	11-23

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
5C:												
Berks-----------	0-6	Channery silt loam	CL, ML, CL-ML, SC, SC-SM	A-4	0	0-5	65-80	55-75	50-75	40-65	16-31	3-11
	6-22	Very channery silt loam, extremely channery loam, channery silty clay loam	SC, CL, CL-ML, GC, GC-GM	A-4, A-2-4, A-6, A-1	0	0-10	45-80	25-75	20-75	15-70	16-36	3-14
	22-32	Very channery silt loam, extremely channery loam, very channery silty clay loam	SC, GC-GM, GC	A-4, A-2-4, A-6, A-1	0	1-10	45-60	25-50	20-50	15-45	16-36	3-14
	32-38	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, GM, GC	A-1, A-2-4	0	3-10	35-50	15-35	15-35	10-30	12-25	1-8
	38-48	Bedrock			---	---	---	---	---	---	---	---
Weikert---------	0-2	Channery silt loam	CL, CL-ML, SC, SC-SM	A-4	0	0-5	65-80	50-75	45-75	35-65	21-31	6-11
	2-8	Very channery silt loam	GC, GC-GM	A-2-4	0	1-10	45-60	25-50	25-45	20-40	21-31	6-11
	8-14	Extremely channery silt loam	GW-GC, GC, GC-GM	A-2-4	0	3-10	30-40	9-25	8-25	5-20	21-31	6-11
	14-24	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
5D:												
Berks-----------	0-6	Channery silt loam	CL, ML, CL-ML, SC, SC-SM	A-4	0	0-5	65-80	55-75	50-75	40-65	16-31	3-11
	6-22	Very channery silt loam, extremely channery loam, channery silty clay loam	SC, CL, CL-ML, GC, GC-GM	A-4, A-2-4, A-6, A-1	0	0-10	45-80	25-75	20-75	15-70	16-36	3-14
	22-32	Very channery silt loam, extremely channery loam, very channery silty clay loam	SC, GC-GM, GC	A-4, A-2-4, A-6, A-1	0	1-10	45-60	25-50	20-50	15-45	16-36	3-14
	32-38	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, GM, GC	A-1, A-2-4	0	3-10	35-50	15-35	15-35	10-30	12-25	1-8
	38-48	Bedrock			---	---	---	---	---	---	---	---
Weikert---------	0-2	Channery silt loam	CL, CL-ML, SC, SC-SM	A-4	0	0-5	65-80	50-75	45-75	35-65	21-31	6-11
	2-8	Very channery silt loam	GC, GC-GM	A-2-4	0	1-10	45-60	25-50	25-45	20-40	21-31	6-11
	8-14	Extremely channery silt loam	GW-GC, GC, GC-GM	A-2-4	0	3-10	30-40	9-25	8-25	5-20	21-31	6-11
	14-24	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
5E:												
Berks-----------	0-6	Channery silt loam	CL, ML, CL-ML, SC, SC-SM	A-4	0	0-5	65-80	55-75	50-75	40-65	16-31	3-11
	6-22	Very channery silt loam, extremely channery loam, channery silty clay loam	SC, CL, CL-ML, GC, GC-GM	A-4, A-2-4, A-6, A-1	0	0-10	45-80	25-75	20-75	15-70	16-36	3-14
	22-32	Very channery silt loam, extremely channery loam, very channery silty clay loam	SC, GC-GM, GC	A-4, A-2-4, A-6, A-1	0	1-10	45-60	25-50	20-50	15-45	16-36	3-14
	32-38	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, GM, GC	A-1, A-2-4	0	3-10	35-50	15-35	15-35	10-30	12-25	1-8
	38-48	Bedrock			---	---	---	---	---	---	---	---
Weikert---------	0-2	Channery silt loam	CL, CL-ML, SC, SC-SM	A-4	0	0-5	65-80	50-75	45-75	35-65	21-31	6-11
	2-8	Very channery silt loam	GC, GC-GM	A-2-4	0	1-10	45-60	25-50	25-45	20-40	21-31	6-11
	8-14	Extremely channery silt loam	GW-GC, GC, GC-GM	A-2-4	0	3-10	30-40	9-25	8-25	5-20	21-31	6-11
	14-24	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
5F:												
Berks-----------	0-6	Channery silt loam	CL, ML, CL-ML, SC, SC-SM	A-4	0	0-5	65-80	55-75	50-75	40-65	16-31	3-11
	6-22	Very channery silt loam, extremely channery loam, channery silty clay loam	SC, CL, CL-ML, GC, GC-GM	A-4, A-2-4, A-6, A-1	0	0-10	45-80	25-75	20-75	15-70	16-36	3-14
	22-32	Very channery silt loam, extremely channery loam, very channery silty clay loam	SC, GC-GM, GC	A-4, A-2-4, A-6, A-1	0	1-10	45-60	25-50	20-50	15-45	16-36	3-14
	32-38	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, GM, GC	A-1, A-2-4	0	3-10	35-50	15-35	15-35	10-30	12-25	1-8
	38-48	Bedrock			---	---	---	---	---	---	---	---
Weikert---------	0-2	Channery silt loam	CL, CL-ML, SC, SC-SM	A-4	0	0-5	65-80	50-75	45-75	35-65	21-31	6-11
	2-8	Very channery silt loam	GC, GC-GM	A-2-4	0	1-10	45-60	25-50	25-45	20-40	21-31	6-11
	8-14	Extremely channery silt loam	GW-GC, GC, GC-GM	A-2-4	0	3-10	30-40	9-25	8-25	5-20	21-31	6-11
	14-24	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
6E:												
Berks-----------	0-6	Channery silt loam	CL, ML, CL-ML, SC, SC-SM	A-4	0	0-5	65-80	55-75	50-75	40-65	16-31	3-11
	6-22	Very channery silt loam, extremely channery loam, channery silty clay loam	SC, CL, CL-ML, GC, GC-GM	A-4, A-2-4, A-6, A-1	0	0-10	45-80	25-75	20-75	15-70	16-36	3-14
	22-32	Very channery silt loam, extremely channery loam, very channery silty clay loam	SC, GC-GM, GC	A-4, A-2-4, A-6, A-1	0	1-10	45-60	25-50	20-50	15-45	16-36	3-14
	32-38	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, GM, GC	A-1, A-2-4	0	3-10	35-50	15-35	15-35	10-30	12-25	1-8
	38-48	Bedrock			---	---	---	---	---	---	---	---
Westmoreland----	0-6	Silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-95	80-95	70-95	55-85	18-31	4-11
	6-36	Silty clay loam, channery silty clay loam, channery silt loam	CL, SC	A-6, A-4	0	0-10	70-95	60-95	55-95	45-90	23-39	7-16
	36-54	Very channery silt loam, very channery silty clay loam, extremely channery silt loam	GC, GW-GC	A-2-6, A-2-4, A-7-6, A-1	0	5-20	25-50	5-40	5-40	5-40	18-43	4-18
	54-64	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
6F:												
Berks-----------	0-6	Channery silt loam	CL, ML, CL-ML, SC, SC-SM	A-4	0	0-5	65-80	55-75	50-75	40-65	16-31	3-11
	6-22	Very channery silt loam, extremely channery loam, channery silty clay loam	SC, CL, CL-ML, GC, GC-GM	A-4, A-2-4, A-6, A-1	0	0-10	45-80	25-75	20-75	15-70	16-36	3-14
	22-32	Very channery silt loam, extremely channery loam, very channery silty clay loam	SC, GC-GM, GC	A-4, A-2-4, A-6, A-1	0	1-10	45-60	25-50	20-50	15-45	16-36	3-14
	32-38	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, GM, GC	A-1, A-2-4	0	3-10	35-50	15-35	15-35	10-30	12-25	1-8
	38-48	Bedrock			---	---	---	---	---	---	---	---
Westmoreland----	0-6	Silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-95	80-95	70-95	55-85	18-31	4-11
	6-36	Silty clay loam, channery silty clay loam, channery silt loam	CL, SC	A-6, A-4	0	0-10	70-95	60-95	55-95	45-90	23-39	7-16
	36-54	Very channery silt loam, very channery silty clay loam, extremely channery silt loam	GC, GW-GC	A-2-6, A-2-4, A-7-6, A-1	0	5-20	25-50	5-40	5-40	5-40	18-43	4-18
	54-64	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
7E:												
Bland-----------	0-4	Silty clay loam	CL, CH	A-6, A-7	0	0-5	90-100	80-100	75-100	70-95	38-54	19-28
	4-30	Silty clay, clay	CH	A-7	0	0-5	90-100	80-100	75-100	70-95	52-67	32-44
	30-36	Channery clay, channery silty clay loam	GC, CH, SC	A-6, A-7	0-5	0-10	60-85	50-75	50-75	45-70	31-59	13-36
	36-46	Bedrock			---	---	---	---	---	---	---	---
8D:												
Bland-----------	0-4	Silty clay loam	CL, CH	A-6, A-7	0	0-5	90-100	80-100	75-100	70-95	38-54	19-28
	4-30	Silty clay, clay	CH	A-7	0	0-5	90-100	80-100	75-100	70-95	52-67	32-44
	30-36	Channery clay, channery silty clay loam	CH, GC, SC	A-6, A-7	0-5	0-10	60-85	50-75	50-75	45-70	31-59	13-36
	36-46	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
8E:												
Bland-----------	0-4	Silty clay loam	CL, CH	A-6, A-7	0	0-5	90-100	80-100	75-100	70-95	38-54	19-28
	4-30	Silty clay, clay	CH	A-7	0	0-5	90-100	80-100	75-100	70-95	52-67	32-44
	30-36	Channery clay, channery silty clay loam	SC, CH, GC	A-6, A-7	0-5	0-10	60-85	50-75	50-75	45-70	31-59	13-36
	36-46	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
9D:												
Bland-----------	0-4	Silty clay loam	CL, CH	A-6, A-7	0	0-5	90-100	80-100	75-100	70-95	38-54	19-28
	4-30	Silty clay, clay	CH	A-7	0	0-5	90-100	80-100	75-100	70-95	52-67	32-44
	30-36	Channery clay, channery silty clay loam	CH, GC, SC	A-6, A-7	0-5	0-10	60-85	50-75	50-75	45-70	31-59	13-36
	36-46	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
10D:												
Calvin----------	0-9	Loam	CL-ML, CL, ML, SC, SC-SM	A-4	0	0-5	85-95	80-90	65-85	45-70	16-30	3-11
	9-25	Very channery loam, channery loam, channery silt loam	SC, SC-SM, CL, CL-ML	A-4, A-2-4	0	5-20	55-75	40-70	35-70	25-60	16-30	3-11
	25-30	Very channery loam, very channery silt loam, extremely channery loam	SC, SC-SM, GW-GC, GC, GC-GM	A-2-4, A-1	0	5-30	40-65	20-55	15-55	10-50	16-30	3-11
	30-40	Bedrock			---	---	---	---	---	---	---	---
11F:												
Calvin----------	0-9	Loam	CL-ML, CL, ML, SC, SC-SM	A-4	0	0-5	85-95	80-90	65-85	45-70	16-30	3-11
	9-25	Very channery loam, channery loam, channery silt loam	SC, SC-SM, CL, CL-ML	A-4, A-2-4	0	5-20	55-75	40-70	35-70	25-60	16-30	3-11
	25-30	Very channery loam, very channery silt loam, extremely channery loam	SC, SC-SM, GW-GC, GC, GC-GM	A-2-4, A-1	0	5-30	40-65	20-55	15-55	10-50	16-30	3-11
	30-40	Bedrock			---	---	---	---	---	---	---	---
Rough-----------	0-2	Channery loam	CL, CL-ML	A-4, A-2-4	0	0-5	60-80	50-75	45-70	30-55	18-31	4-11
	2-8	Very channery loam, very channery silt loam	SC, SC-SM	A-2-4, A-1	0	5-15	45-60	30-55	25-50	15-45	18-31	4-11
	8-10	Extremely channery loam, very channery silt loam	GC, GC-GM, GW-GC	A-2-4, A-1	0	5-25	35-45	15-30	15-30	10-25	18-31	4-11
	10-20	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
12C:												
Carbo-----------	0-6	Silty clay loam	CL	A-6	0	0-1	90-100	85-100	80-100	70-95	36-48	16-25
	6-29	Clay	CH	A-7-5, A-7-6	0	0-1	80-100	75-100	70-100	55-95	66-84	39-53
	29-39	Bedrock			---	---	---	---	---	---	---	---
Beech Grove-----	0-4	Channery silt loam	SC, SC-SM, CL, CL-ML	A-4, A-6	0	0-5	60-80	50-75	45-75	35-65	21-36	4-16
	4-14	Bedrock			---	---	---	---	---	---	---	---
12D:												
Carbo-----------	0-6	Silty clay loam	CL	A-6	0	0-1	90-100	85-100	80-100	70-95	36-48	16-25
	6-29	Clay	CH	A-7-5, A-7-6	0	0-1	80-100	75-100	70-100	55-95	66-84	39-53
	29-39	Bedrock			---	---	---	---	---	---	---	---
Beech Grove-----	0-4	Channery silt loam	SC, SC-SM, CL, CL-ML	A-4, A-6	0	0-5	60-80	50-75	45-75	35-65	21-36	4-16
	4-14	Bedrock			---	---	---	---	---	---	---	---
12E:												
Carbo-----------	0-6	Silty clay loam	CL	A-6	0	0-1	90-100	85-100	80-100	70-95	36-48	16-25
	6-29	Clay	CH	A-7-5, A-7-6	0	0-1	80-100	75-100	70-100	55-95	66-84	39-53
	29-39	Bedrock			---	---	---	---	---	---	---	---
Beech Grove-----	0-4	Channery silt loam	SC, SC-SM, CL, CL-ML	A-4, A-6	0	0-5	60-80	50-75	45-75	35-65	21-36	4-16
	4-14	Bedrock			---	---	---	---	---	---	---	---
12F:												
Carbo-----------	0-6	Silty clay loam	CL	A-6	0	0-1	90-100	85-100	80-100	70-95	36-48	16-25
	6-29	Clay	CH	A-7-5, A-7-6	0	0-1	80-100	75-100	70-100	55-95	66-84	39-53
	29-39	Bedrock			---	---	---	---	---	---	---	---
Beech Grove-----	0-4	Channery silt loam	SC, SC-SM, CL, CL-ML	A-4, A-6	0	0-5	60-80	50-75	45-75	35-65	21-36	4-16
	4-14	Bedrock			---	---	---	---	---	---	---	---
13C:												
Carbo-----------	0-6	Silty clay loam	CL	A-6	0	0-1	90-100	85-100	80-100	70-95	36-48	16-25
	6-29	Clay	CH	A-7-5, A-7-6	0	0-1	80-100	75-100	70-100	55-95	66-84	39-53
	29-39	Bedrock			---	---	---	---	---	---	---	---
Frederick-------	0-2	Silt loam	CL, CL-ML	A-4, A-6	0	0-3	85-100	80-100	70-100	55-90	21-31	6-11
	2-8	Silty clay loam	CL	A-6, A-7-6	0	0-3	85-100	80-100	75-100	65-95	31-43	11-18
	8-16	Silty clay loam, clay, clay loam	CL, ML, MH, CH	A-7, A-6	0	0-3	85-100	80-100	70-100	55-95	39-61	16-28
	16-62	Clay, silty clay	MH, CH, ML, CL	A-7	0	0-3	85-100	80-100	70-100	60-95	43-75	18-36

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
13C:												
Urban land.												
14D:												
Carbo-----------	0-6	Silty clay loam	CL	A-6	0	0-1	90-100	85-100	80-100	70-95	36-48	16-25
	6-29	Clay	CH	A-7-5, A-7-6	0	0-1	80-100	75-100	70-100	55-95	66-84	39-53
	29-39	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
14E:												
Carbo-----------	0-6	Silty clay loam	CL	A-6	0	0-1	90-100	85-100	80-100	70-95	36-48	16-25
	6-29	Clay	CH	A-7-5, A-7-6	0	0-1	80-100	75-100	70-100	55-95	66-84	39-53
	29-39	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
15D:												
Carbo-----------	0-6	Silty clay loam	CL	A-6	0	0-1	90-100	85-100	80-100	70-95	36-48	16-25
	6-29	Clay	CH	A-7-5, A-7-6	0	0-1	80-100	75-100	70-100	55-95	66-84	39-53
	29-39	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
16C:												
Cedarcreek------	0-3	Very channery loam	SC	A-2, A-4	0-5	10-20	50-65	35-55	30-50	20-40	21-31	6-11
	3-15	Very channery loam, very channery silt loam, stony loam, extremely channery fine sandy loam	SC, GW-GC, GC	A-2, A-4	0-15	10-30	40-65	15-55	15-55	5-50	21-31	6-11
	15-65	Extremely channery loam, extremely channery silt loam, very stony loam, extremely channery fine sandy loam	GC, GW-GC, SC	A-2, A-4	0-25	10-35	40-65	20-55	15-55	5-50	23-31	7-11

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
16C:												
Sewell----------	0-4	Channery sandy loam	SC-SM, SM	A-1, A-2	0-10	5-20	75-85	60-80	35-55	20-35	15-25	NP-7
	4-9	Very channery sandy loam, very channery fine sandy loam, extremely stony loam	GW-GM, GC-GM, GM, SM, SC-SM	A-1, A-2, A-4	10-40	10-40	40-70	20-60	15-55	10-45	15-25	NP-7
	9-65	Extremely channery sandy loam, very channery fine sandy loam, extremely stony loam	GW-GM, GC-GM, GM, SM, SC-SM	A-1, A-2, A-4	10-30	10-40	40-70	20-60	15-55	10-45	15-25	NP-7
Rock outcrop.												
17A:												
Chagrin---------	0-6	Loam	CL-ML, SC, SC-SM, CL, ML	A-4	0	0-3	85-100	80-100	65-95	45-75	16-30	3-11
	6-42	Sandy clay loam, loam, silt loam, silty clay loam	SC, SC-SM, CL, CL-ML	A-6, A-2-4	0	0-3	85-100	80-100	65-100	30-95	23-39	7-16
	42-62	Sandy loam, loam, silt loam	SC-SM, SC, CL, CL-ML	A-2-4, A-4	0	0-3	85-100	80-100	45-100	25-90	12-30	1-11
18.												
Dumps, mine-Urban land												
19C:												
Frederick-------	0-2	Silt loam	CL, CL-ML	A-4, A-6	0	0-3	85-100	80-100	70-100	55-90	21-31	6-11
	2-8	Silty clay loam	CL	A-6, A-7-6	0	0-3	85-100	80-100	75-100	65-95	31-43	11-18
	8-16	Silty clay loam, clay, clay loam	CL, ML, MH, CH	A-7, A-6	0	0-3	85-100	80-100	70-100	55-95	39-61	16-28
	16-62	Clay, silty clay	MH, CH, ML, CL	A-7	0	0-3	85-100	80-100	70-100	60-95	43-75	18-36

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
19D:												
Frederick-------	0-2	Silt loam	CL, CL-ML	A-4, A-6	0	0-3	85-100	80-100	70-100	55-90	21-31	6-11
	2-8	Silty clay loam	CL	A-6, A-7-6	0	0-3	85-100	80-100	75-100	65-95	31-43	11-18
	8-16	Silty clay loam, clay, clay loam	CL, ML, MH, CH	A-7, A-6	0	0-3	85-100	80-100	70-100	55-95	39-61	16-28
	16-62	Clay, silty clay	MH, CH, ML, CL	A-7	0	0-3	85-100	80-100	70-100	60-95	43-75	18-36
19E:												
Frederick-------	0-2	Silt loam	CL, CL-ML	A-4, A-6	0	0-3	85-100	80-100	70-100	55-90	21-31	6-11
	2-8	Silty clay loam	CL	A-6, A-7-6	0	0-3	85-100	80-100	75-100	65-95	31-43	11-18
	8-16	Silty clay loam, clay, clay loam	CL, ML, MH, CH	A-7, A-6	0	0-3	85-100	80-100	70-100	55-95	39-61	16-28
	16-62	Clay, silty clay	MH, CH, ML, CL	A-7	0	0-3	85-100	80-100	70-100	60-95	43-75	18-36
19F:												
Frederick-------	0-2	Silt loam	CL, CL-ML	A-4, A-6	0	0-3	85-100	80-100	70-100	55-90	21-31	6-11
	2-8	Silty clay loam	CL	A-6, A-7-6	0	0-3	85-100	80-100	75-100	65-95	31-43	11-18
	8-16	Silty clay loam, clay, clay loam	CL, ML, MH, CH	A-7, A-6	0	0-3	85-100	80-100	70-100	55-95	39-61	16-28
	16-62	Clay, silty clay	MH, CH, ML, CL	A-7	0	0-3	85-100	80-100	70-100	60-95	43-75	18-36
20C:												
Frederick-------	0-2	Silt loam	CL, CL-ML	A-4, A-6	0	0-3	85-100	80-100	70-100	55-90	21-31	6-11
	2-8	Silty clay loam	CL	A-6, A-7-6	0	0-3	85-100	80-100	75-100	65-95	31-43	11-18
	8-16	Silty clay loam, clay, clay loam	CL, ML, MH, CH	A-7, A-6	0	0-3	85-100	80-100	70-100	55-95	39-61	16-28
	16-62	Clay, silty clay	MH, CH, ML, CL	A-7	0	0-3	85-100	80-100	70-100	60-95	43-75	18-36
20D:												
Frederick-------	0-2	Silt loam	CL, CL-ML	A-4, A-6	0	0-3	85-100	80-100	70-100	55-90	21-31	6-11
	2-8	Silty clay loam	CL	A-6, A-7-6	0	0-3	85-100	80-100	75-100	65-95	31-43	11-18
	8-16	Silty clay loam, clay, clay loam	CL, ML, MH, CH	A-7, A-6	0	0-3	85-100	80-100	70-100	55-95	39-61	16-28
	16-62	Clay, silty clay	MH, CH, ML, CL	A-7	0	0-3	85-100	80-100	70-100	60-95	43-75	18-36

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
21C:												
Frederick-------	0-2	Gravelly silt loam	CL-ML, CL, ML, SM, SC, SC-SM	A-4, A-6	0	0-7	65-80	55-75	50-75	40-65	13-31	1-11
	2-6	Gravelly silty clay loam	CL, SC	A-6, A-7-6	0	0-7	65-80	55-75	50-75	45-70	31-43	11-18
	6-13	Silty clay, clay, clay loam, silty clay loam	CL, ML, MH, CH	A-7, A-6	0	0-3	85-100	80-100	70-100	55-95	39-61	16-28
	13-62	Clay, silty clay	MH, CH, ML, CL	A-7	0	0-3	85-100	80-100	70-100	60-95	43-75	18-36
21D:												
Frederick-------	0-2	Gravelly silt loam	CL-ML, CL, ML, SM, SC, SC-SM	A-4, A-6	0	0-7	65-80	55-75	50-75	40-65	13-31	1-11
	2-6	Gravelly silty clay loam	CL, SC	A-6, A-7-6	0	0-7	65-80	55-75	50-75	45-70	31-43	11-18
	6-13	Silty clay, clay, clay loam, silty clay loam	CL, ML, MH, CH	A-7, A-6	0	0-3	85-100	80-100	70-100	55-95	39-61	16-28
	13-62	Clay, silty clay	MH, CH, ML, CL	A-7	0	0-3	85-100	80-100	70-100	60-95	43-75	18-36
21E:												
Frederick-------	0-2	Gravelly silt loam	CL-ML, CL, ML, SM, SC, SC-SM	A-4, A-6	0	0-7	65-80	55-75	50-75	40-65	13-31	1-11
	2-6	Gravelly silty clay loam	CL, SC	A-6, A-7-6	0	0-7	65-80	55-75	50-75	45-70	31-43	11-18
	6-13	Silty clay, clay, clay loam, silty clay loam	CL, ML, MH, CH	A-7, A-6	0	0-3	85-100	80-100	70-100	55-95	39-61	16-28
	13-62	Clay, silty clay	MH, CH, ML, CL	A-7	0	0-3	85-100	80-100	70-100	60-95	43-75	18-36

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
21F:												
Frederick-------	0-2	Gravelly silt loam	CL-ML, CL, ML, SM, SC, SC-SM	A-4, A-6	0	0-7	65-80	55-75	50-75	40-65	13-31	1-11
	2-6	Gravelly silty clay loam	CL, SC	A-6, A-7-6	0	0-7	65-80	55-75	50-75	45-70	31-43	11-18
	6-13	Silty clay, clay, clay loam, silty clay loam	CL, ML, MH, CH	A-7, A-6	0	0-3	85-100	80-100	70-100	55-95	39-61	16-28
	13-62	Clay, silty clay	MH, CH, ML, CL	A-7	0	0-3	85-100	80-100	70-100	60-95	43-75	18-36
22C:												
Frederick-------	0-2	Gravelly silt loam	CL-ML, CL, ML, SM, SC, SC-SM	A-4, A-6	0	0-7	65-80	55-75	50-75	40-65	13-31	1-11
	2-6	Gravelly silty clay loam	CL, SC	A-6, A-7-6	0	0-7	65-80	55-75	50-75	45-70	31-43	11-18
	6-13	Silty clay, clay, clay loam, silty clay loam	CL, ML, MH, CH	A-7, A-6	0	0-3	85-100	80-100	70-100	55-95	39-61	16-28
	13-62	Clay, silty clay	MH, CH, ML, CL	A-7	0	0-3	85-100	80-100	70-100	60-95	43-75	18-36
22D:												
Frederick-------	0-2	Gravelly silt loam	CL-ML, CL, ML, SM, SC, SC-SM	A-4, A-6	0	0-7	65-80	55-75	50-75	40-65	13-31	1-11
	2-6	Gravelly silty clay loam	CL, SC	A-6, A-7-6	0	0-7	65-80	55-75	50-75	45-70	31-43	11-18
	6-13	Silty clay, clay, clay loam, silty clay loam	CL, ML, MH, CH	A-7, A-6	0	0-3	85-100	80-100	70-100	55-95	39-61	16-28
	13-62	Clay, silty clay	MH, CH, ML, CL	A-7	0	0-3	85-100	80-100	70-100	60-95	43-75	18-36
23D:												
Gilpin----------	0-3	Silt loam	CL, CL-ML	A-4	0	0-3	80-95	75-95	70-90	55-80	21-31	6-11
	3-7	Silt loam, loam	CL, CL-ML	A-4	0	0-3	80-95	75-95	65-90	45-80	21-31	6-11
	7-31	Silty clay loam, channery silt loam, channery loam	CL, SC	A-6, A-4	0	0-5	65-92	60-90	50-90	35-85	23-39	7-16
	31-41	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
24D:												
Gilpin----------	0-3	Silt loam	ML, CL, CL-ML, SM, SC, SC-SM	A-2, A-4, A-6	0	0	60-95	50-90	45-90	35-80	9-30	NP-11
	3-5	Silt loam, loam, gravelly loam	ML, CL, CL-ML, SM, SC, SC-SM	A-2, A-4, A-6	0	0-1	60-95	50-90	45-90	30-80	9-30	NP-11
	5-30	Gravelly silt loam, silty clay loam, silt loam, gravelly loam	CL, CL-ML, SC, SC-SM	A-6, A-2	0	0-3	65-95	50-90	45-90	30-85	23-39	7-16
	30-35	Very gravelly loam, very gravelly silt loam, extremely gravelly sandy loam, extremely gravelly loamy fine sand	SM, SC, SC-SM, GM, GC, GC-GM	A-1, A-2, A-6	0	0-10	35-65	15-50	10-50	5-45	9-30	NP-11
	35-39	Bedrock			---	---	---	---	---	---	---	---
	39-49	Bedrock			---	---	---	---	---	---	---	---
Berks-----------	0-4	Silt loam	CL-ML, ML, CL	A-4	0	0	75-100	70-100	60-100	45-90	12-30	1-11
	4-8	Channery silt loam, very channery loam, channery silty clay loam	CL-ML, CL, ML, SM, SC, SC-SM, GM, GC, GC-GM	A-4, A-1, A-2, A-6	0	0-5	45-80	30-75	25-70	15-70	12-34	1-13
	8-23	Very channery silt loam, very channery loam, very channery silty clay loam	SC-SM, SC, SM	A-4, A-1, A-2, A-6	0	0-20	50-65	30-50	30-50	20-50	12-34	1-13
	23-34	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, GC, GM, SC-SM, SM, SC	A-1, A-2, A-4	0-1	0-25	35-65	15-50	15-50	10-45	12-25	1-8
	34-36	Bedrock			---	---	---	---	---	---	---	---
	36-46	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
24F:												
Gilpin----------	0-3	Silt loam	ML, CL, CL-ML, SM, SC, SC-SM	A-2, A-4, A-6	0	0	60-95	50-90	45-90	35-80	9-30	NP-11
	3-5	Silt loam, loam, gravelly loam	ML, CL, CL-ML, SM, SC, SC-SM	A-2, A-4, A-6	0	0-1	60-95	50-90	45-90	30-80	9-30	NP-11
	5-30	Gravelly silt loam, silty clay loam, silt loam, gravelly loam	CL, CL-ML, SC, SC-SM	A-6, A-2	0	0-3	65-95	50-90	45-90	30-85	23-39	7-16
	30-35	Very gravelly loam, very gravelly silt loam, extremely gravelly sandy loam, extremely gravelly loamy fine sand	SM, SC, SC-SM, GM, GC, GC-GM	A-1, A-2, A-6	0	0-10	35-65	15-50	10-50	5-45	9-30	NP-11
	35-39	Bedrock			---	---	---	---	---	---	---	---
	39-49	Bedrock			---	---	---	---	---	---	---	---
Berks-----------	0-4	Silt loam	CL-ML, ML, CL	A-4	0	0	75-100	70-100	60-100	45-90	12-30	1-11
	4-8	Channery silt loam, very channery loam, channery silty clay loam	CL-ML, CL, ML, SM, SC, SC-SM, GM, GC, GC-GM	A-4, A-1, A-2, A-6	0	0-5	45-80	30-75	25-70	15-70	12-34	1-13
	8-23	Very channery silt loam, very channery loam, very channery silty clay loam	SC-SM, SC, SM	A-4, A-1, A-2, A-6	0	0-20	50-65	30-50	30-50	20-50	12-34	1-13
	23-34	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, GC, GM, SC-SM, SM, SC	A-1, A-2, A-4	0-1	0-25	35-65	15-50	15-50	10-45	12-25	1-8
	34-36	Bedrock			---	---	---	---	---	---	---	---
	36-46	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
25E:												
Gilpin----------	0-3	Silt loam	CL, CL-ML	A-4	0	0-3	80-95	75-95	70-90	55-80	21-31	6-11
	3-7	Silt loam, loam	CL, CL-ML	A-4	0	0-3	80-95	75-95	65-90	45-80	21-31	6-11
	7-31	Silty clay loam, channery silt loam, channery loam	CL, SC	A-6, A-4	0	0-5	65-92	60-90	50-90	35-85	23-39	7-16
	31-41	Bedrock			---	---	---	---	---	---	---	---
Shelocta--------	0-3	Silt loam	CL-ML, CL, ML	A-4	0	0-1	80-95	75-95	65-95	50-85	16-30	3-11
	3-55	Gravelly silty clay loam, silty clay loam, silt loam, channery silty clay loam, very gravelly loam	CL	A-6, A-2-4	0	0-2	50-90	40-90	30-90	25-85	23-39	7-16
	55-70	Extremely channery silty clay, channery clay	GM, MH, GC, CH	A-2-7, A-7	0	0-10	35-80	20-75	20-75	20-70	43-70	18-33
26F:												
Gilpin----------	0-3	Silt loam	CL, CL-ML	A-4	0	0-3	80-95	75-95	70-90	55-80	21-31	6-11
	3-7	Silt loam, loam	CL, CL-ML	A-4	0	0-3	80-95	75-95	65-90	45-80	21-31	6-11
	7-31	Silty clay loam, channery silt loam, channery loam	CL, SC	A-6, A-4	0	0-5	65-92	60-90	50-90	35-85	23-39	7-16
	31-41	Bedrock			---	---	---	---	---	---	---	---
Shelocta--------	0-3	Silt loam	CL-ML, CL, ML	A-4	0	0-1	80-95	75-95	65-95	50-85	16-30	3-11
	3-55	Gravelly silty clay loam, silty clay loam, silt loam, channery silty clay loam, very gravelly loam	CL	A-6, A-2-4	0	0-2	50-90	40-90	30-90	25-85	23-39	7-16
	55-70	Extremely channery silty clay, channery clay	GM, MH, GC, CH	A-2-7, A-7	0	0-10	35-80	20-75	20-75	20-70	43-70	18-33

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
27A:												
Grigsby---------	0-13	Sandy loam	SM, SC-SM, SC	A-2-4, A-4	0	0	85-100	75-100	45-70	25-40	12-30	NP-11
	13-49	Sandy loam, loam, silt loam	SM, SC, SC-SM, CL, ML, CL-ML	A-2-4, A-4	0	0	85-100	75-100	45-100	25-90	9-28	NP-10
	49-65	Sandy loam, very gravelly loamy fine sand, loam	SM, SC-SM, ML, CL-ML, GC-GM, GP-GM, GM	A-2-4, A-1, A-4	0	0	45-100	25-100	15-95	10-75	8-21	NP-4
28C:												
Highsplint------	0-3	Channery silt loam	CL-ML, ML, CL, SC-SM, SM, SC	A-4	0-3	0-15	70-85	60-80	50-75	40-70	12-25	1-8
	3-59	Very channery silt loam, channery silt loam, very flaggy silt loam, channery silty clay loam, very channery clay loam	SC-SM, SM, SC, CL-ML, ML, CL	A-4, A-6, A-2	0-10	10-30	60-85	45-80	40-75	30-70	12-34	1-13
	59-82	Very channery loam, very gravelly fine sandy loam, very channery sandy loam, extremely flaggy silt loam	SC-SM, SC, SM, SP-SM, SP-SC	A-2, A-4, A-1	0-10	15-30	50-70	30-60	20-60	10-55	12-30	1-11

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
28D:												
Highsplint------	0-3	Channery silt loam	CL-ML, ML, CL, SC-SM, SM, SC	A-4	0-3	0-15	70-85	60-80	50-75	40-70	12-25	1-8
	3-59	Very channery silt loam, channery silt loam, very flaggy silt loam, channery silty clay loam, very channery clay loam	SC-SM, SM, SC, CL-ML, ML, CL	A-4, A-6, A-2	0-10	10-30	60-85	45-80	40-75	30-70	12-34	1-13
	59-82	Very channery loam, very gravelly fine sandy loam, very channery sandy loam, extremely flaggy silt loam	SC-SM, SC, SM, SP-SM, SP-SC	A-2, A-4, A-1	0-10	15-30	50-70	30-60	20-60	10-55	12-30	1-11
29F:												
Highsplint------	0-3	Channery silt loam	CL-ML, ML, CL, SC-SM, SM, SC	A-4	0-3	0-15	70-85	60-80	50-75	40-70	12-25	1-8
	3-59	Very channery silt loam, channery silt loam, very flaggy silt loam, channery silty clay loam, very channery clay loam	SC-SM, SM, SC, CL-ML, ML, CL	A-4, A-6, A-2	0-10	10-30	60-85	45-80	40-75	30-70	12-34	1-13
	59-82	Very channery loam, very gravelly fine sandy loam, very channery sandy loam, extremely flaggy silt loam	SC-SM, SC, SM, SP-SM, SP-SC	A-2, A-4, A-1	0-10	15-30	50-70	30-60	20-60	10-55	12-30	1-11

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
29F:												
Shelocta--------	0-4	Gravelly loam	SC-SM, SM, SC	A-4, A-2	0	0-5	60-80	50-70	40-70	30-55	13-30	1-11
	4-13	Loam, silty clay loam, gravelly silt loam	CL-ML, ML, CL, SM, SC, SC-SM	A-4, A-2, A-6	0	0-10	60-95	50-90	40-90	30-85	13-39	1-16
	13-50	Gravelly loam, gravelly silt loam, silty clay loam, very gravelly silt loam	SC, SC-SM, CL, CL-ML	A-6, A-4, A-2	0-5	0-15	60-95	45-90	40-90	30-85	23-39	7-16
	50-86	Very gravelly loam, extremely gravelly loam, gravelly silty clay loam, cobbly clay loam	SC, SC-SM, SM, CL, CL-ML, ML	A-2, A-1, A-4, A-6	0-5	0-15	50-80	35-75	30-75	20-70	13-39	1-16
30A:												
Holly-----------	0-4	Loam	CL, CL-ML	A-4	0	0	90-100	85-100	70-95	50-75	21-31	6-11
	4-34	Loam, silt loam, silty clay loam	CL	A-6, A-4	0	0	80-100	75-100	65-100	45-95	23-39	7-16
	34-62	Loam, silty clay loam, gravelly sand	CL, ML, CL-ML, SP-SC, SC, SC-SM	A-4, A-2-4, A-1	0	0-8	75-100	65-100	35-100	5-95	12-43	1-18

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
31D:												
Kaymine---------	0-4	Very channery silt loam	SC-SM, SM, SC, GC-GM, GC, GM	A-1, A-2, A-4	0	2-10	45-65	30-50	30-50	20-45	13-25	1-8
	4-28	Extremely channery silt loam, very channery silt loam, extremely channery loam, stony loam	SC-SM, SM, SC, GC-GM, GC, GM	A-1, A-2, A-4	0-15	10-25	40-70	20-60	20-60	10-50	13-30	1-11
	28-64	Very flaggy silt loam, very channery silt loam, extremely channery loam, very stony loam	SC-SM, SM, SC, ML, GC-GM, GC, GM, CL-ML, CL	A-1, A-2, A-4	10-25	10-35	45-80	30-70	25-70	20-65	13-30	1-11
32E:												
Kaymine---------	0-4	Very channery silt loam	SC-SM, SM, SC, GC-GM, GC, GM	A-1, A-2, A-4	0	2-10	45-65	30-50	30-50	20-45	13-25	1-8
	4-28	Extremely channery silt loam, very channery silt loam, extremely channery loam, stony loam	SC-SM, SM, SC, GC-GM, GC, GM	A-1, A-2, A-4	0-15	10-25	40-70	20-60	20-60	10-50	13-30	1-11
	28-64	Very flaggy silt loam, very channery silt loam, extremely channery loam, very stony loam	SC-SM, SM, SC, ML, GC-GM, GC, GM, CL-ML, CL	A-1, A-2, A-4	10-25	10-35	45-80	30-70	25-70	20-65	13-30	1-11

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
32E:												
Cedarcreek------	0-3	Very channery loam	SC	A-2, A-4	0-5	10-20	50-65	35-55	30-50	20-40	21-31	6-11
	3-15	Very channery loam, very channery silt loam, stony loam, extremely channery fine sandy loam	SC, GW-GC, GC	A-2, A-4	0-15	10-30	40-65	15-55	15-55	5-50	21-31	6-11
	15-65	Extremely channery loam, extremely channery silt loam, very stony loam, extremely channery fine sandy loam	GC, GW-GC, SC	A-2, A-4	0-25	10-35	40-65	20-55	15-55	5-50	23-31	7-11
33F:												
Kaymine---------	0-4	Very channery silt loam	SC-SM, SM, SC, GC-GM, GC, GM	A-1, A-2, A-4	0	2-10	45-65	30-50	30-50	20-45	13-25	1-8
	4-28	Extremely channery silt loam, very channery silt loam, extremely channery loam, stony loam	SC-SM, SM, SC, GC-GM, GC, GM	A-1, A-2, A-4	0-15	10-25	40-70	20-60	20-60	10-50	13-30	1-11
	28-64	Very flaggy silt loam, very channery silt loam, extremely channery loam, very stony loam	SC-SM, SM, SC, ML, GC-GM, GC, GM, CL-ML, CL	A-1, A-2, A-4	10-25	10-35	45-80	30-70	25-70	20-65	13-30	1-11

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
33F:												
Fiveblock-------	0-6	Very channery sandy loam	SC-SM, SM	A-1, A-2	0-10	10-35	50-65	35-55	20-40	10-20	12-23	1-7
	6-25	Very channery sandy loam, extremely channery sandy loam, extremely stony loamy sand	SC-SM, SM, GW-GM	A-1, A-2	10-40	10-40	40-70	20-60	10-45	5-25	12-23	1-7
	25-65	Extremely channery sandy loam, very channery sandy loam, extremely stony loamy sand	GW-GM, SM, SC-SM	A-1, A-2	10-30	10-40	40-70	20-60	10-45	5-25	12-23	1-7
34C:												
Kaymine---------	0-4	Very channery silt loam	SC-SM, SM, SC, GC-GM, GC, GM	A-1, A-2, A-4	0	2-10	45-65	30-50	30-50	20-45	13-25	1-8
	4-28	Extremely channery silt loam, very channery silt loam, extremely channery loam, stony loam	SC-SM, SM, SC, GC-GM, GC, GM	A-1, A-2, A-4	0-15	10-25	40-70	20-60	20-60	10-50	13-30	1-11
	28-64	Very flaggy silt loam, very channery silt loam, extremely channery loam, very stony loam	SC-SM, SM, SC, ML, GC-GM, GC, GM, CL-ML, CL	A-1, A-2, A-4	10-25	10-35	45-80	30-70	25-70	20-65	13-30	1-11

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
34C:												
Fiveblock-------	0-6	Very channery sandy loam	SC-SM, SM	A-1, A-2	0-10	10-35	50-65	35-55	20-40	10-20	12-23	1-7
	6-25	Very channery sandy loam, extremely channery sandy loam, extremely stony loamy sand	SC-SM, SM, GW-GM	A-1, A-2	10-40	10-40	40-70	20-60	10-45	5-25	12-23	1-7
	25-65	Extremely channery sandy loam, very channery sandy loam, extremely stony loamy sand	GW-GM, SM, SC-SM	A-1, A-2	10-30	10-40	40-70	20-60	10-45	5-25	12-23	1-7
Cedarcreek------	0-3	Very channery loam	SC	A-2, A-4	0-5	10-20	50-65	35-55	30-50	20-40	21-31	6-11
	3-15	Very channery loam, very channery silt loam, stony loam, extremely channery fine sandy loam	SC, GW-GC, GC	A-2, A-4	0-15	10-30	40-65	15-55	15-55	5-50	21-31	6-11
	15-65	Extremely channery loam, extremely channery silt loam, very stony loam, extremely channery fine sandy loam	GC, GW-GC, SC	A-2, A-4	0-25	10-35	40-65	20-55	15-55	5-50	23-31	7-11

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
35C:												
Lily------------	0-3	Loam	CL-ML, CL, ML, SC-SM	A-4	0	0-8	85-100	80-100	70-95	50-75	12-25	1-8
	3-7	Loam, gravelly sandy loam	CL-ML, CL, SC-ML, SC, SM	A-4, A-2-4	0	0-7	85-100	75-100	45-95	25-75	12-25	1-8
	7-24	Loam, cobbly loam, clay loam	CL, SC	A-6, A-2-4	0	0-15	90-100	85-100	65-100	30-80	23-39	7-16
	24-28	Cobbly sandy loam, loam	SC, SC-SM, CL, CL-ML	A-2-6, A-2-4, A-6	0	0-25	75-100	65-100	40-95	20-75	21-39	6-16
	28-38	Bedrock			---	---	---	---	---	---	---	---
35D:												
Lily------------	0-3	Loam	CL-ML, CL, ML, SC-SM	A-4	0	0-8	85-100	80-100	70-95	50-75	12-25	1-8
	3-7	Loam, gravelly sandy loam	CL-ML, CL, ML, SC, SC-SM	A-4, A-2-4	0	0-7	85-100	75-100	45-95	25-75	12-25	1-8
	7-24	Loam, cobbly loam, clay loam	CL, SC	A-6, A-2-4	0	0-15	90-100	85-100	65-100	30-80	23-39	7-16
	24-28	Cobbly sandy loam, loam	SC, SC-SM, CL, CL-ML	A-2-6, A-2-4, A-6	0	0-25	75-100	65-100	40-95	20-75	21-39	6-16
	28-38	Bedrock			---	---	---	---	---	---	---	---
35E:												
Lily------------	0-3	Loam	CL-ML, CL, ML, SC-SM	A-4	0	0-8	85-100	80-100	70-95	50-75	12-25	1-8
	3-7	Loam, gravelly sandy loam	CL-ML, CL, ML, SC, SC-SM	A-4, A-2-4	0	0-7	85-100	75-100	45-95	25-75	12-25	1-8
	7-24	Loam, cobbly loam, clay loam	CL, SC	A-6, A-2-4	0	0-15	90-100	85-100	65-100	30-80	23-39	7-16
	24-28	Cobbly sandy loam, loam	SC, SC-SM, CL, CL-ML	A-2-6, A-2-4, A-6	0	0-25	75-100	65-100	40-95	20-75	21-39	6-16
	28-38	Bedrock			---	---	---	---	---	---	---	---
36A:												
Lobdell---------	0-8	Silt loam	CL, CL-ML	A-4	0	0-1	95-100	90-100	80-100	65-90	21-31	6-11
	8-48	Loam, silt loam	CL, SC	A-4	0	0-3	85-100	75-100	65-100	45-90	23-31	7-11
	48-62	Loam, silt loam	CL, SC	A-4	0	0-3	85-100	75-100	65-100	45-90	23-31	7-11

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
36A:												
Orrville	0-6	Loam	CL, CL-ML	A-4	0	0-1	95-100	90-100	80-100	65-90	21-31	6-11
	6-34	Loam, silt loam	CL, SC	A-4	0	0-1	85-100	75-100	65-100	45-90	23-31	7-11
	34-62	Sandy loam, loam, silty clay loam, gravelly sandy loam, silt loam	SC, CL	A-2-4	0	0-3	85-100	75-100	65-100	45-90	23-31	7-11
37D:												
Mandy	0-4	Channery silt loam	CL-ML, CL, ML	A-4	0	1-5	80-85	75-85	70-85	55-75	13-30	1-11
	4-6	Channery silt loam, channery loam	CL-ML, CL, ML, SM, SC, SC-SM	A-4	0	1-5	80-85	70-85	60-85	40-75	13-30	1-11
	6-10	Channery silt loam, very channery loam	CL, CL-ML, SC, SC-SM	A-4, A-2-4	0	5-10	55-75	40-65	35-60	25-55	16-31	3-11
	10-29	Very channery silt loam, very channery loam	SC, SC-SM, CL, CL-ML	A-4, A-2-4	0	8-15	55-75	45-65	35-65	25-55	16-31	3-11
	29-37	Extremely channery silt loam, extremely channery loam	GC, GC-GM	A-2-4, A-1	0	15-20	30-45	5-30	5-25	5-25	16-31	3-11
	37-47	Bedrock			---	---	---	---	---	---	---	---
Paddyknob	0-3	Very channery loam	SC-SM, SC	A-4, A-2-4	0-2	10-30	55-65	45-55	35-50	25-40	16-25	3-8
	3-6	Very channery loam, channery fine sandy loam, very channery sandy loam	SC-SM, SC, SM	A-4, A-2-4, A-1	0-2	10-30	55-80	40-70	20-65	15-50	14-27	2-9
	6-26	Very channery sandy loam, very channery loam, channery fine sandy loam	SC-SM, SC, SM	A-2-4, A-1, A-4	0-2	10-35	55-80	40-75	25-70	15-55	14-27	2-9
	26-36	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
38D:												
Marrowbone------	0-5	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-4, A-2	0	0	85-100	75-100	55-85	30-55	11-23	NP-7
	5-22	Gravelly sandy loam, fine sandy loam, sandy loam	SM, SC-SM	A-2, A-1, A-4	0	0	65-100	55-90	30-80	15-50	9-23	NP-7
	22-33	Very gravelly loamy fine sand, fine sandy loam, gravelly sandy loam, very gravelly loamy sand	SM, SC-SM, SW-SM	A-2, A-1, A-4	0	0-10	55-90	40-85	20-70	5-45	9-21	NP-6
	33-45	Bedrock			---	---	---	---	---	---	---	---
	45-55	Bedrock			---	---	---	---	---	---	---	---
38E:												
Marrowbone------	0-5	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-4, A-2	0	0	85-100	75-100	55-85	30-55	11-23	NP-7
	5-22	Gravelly sandy loam, fine sandy loam, sandy loam	SM, SC-SM	A-2, A-1, A-4	0	0	65-100	55-90	30-80	15-50	9-23	NP-7
	22-33	Very gravelly loamy fine sand, fine sandy loam, gravelly sandy loam, very gravelly loamy sand	SM, SC-SM, SW-SM	A-2, A-1, A-4	0	0-10	55-90	40-85	20-70	5-45	9-21	NP-6
	33-45	Bedrock			---	---	---	---	---	---	---	---
	45-55	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
38F:												
Marrowbone------	0-5	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-4, A-2	0	0	85-100	75-100	55-85	30-55	11-23	NP-7
	5-22	Gravelly sandy loam, fine sandy loam, sandy loam	SM, SC-SM	A-2, A-1, A-4	0	0	65-100	55-90	30-80	15-50	9-23	NP-7
	22-33	Very gravelly loamy fine sand, fine sandy loam, gravelly sandy loam, very gravelly loamy sand	SM, SC-SM, SW-SM	A-2, A-1, A-4	0	0-10	55-90	40-85	20-70	5-45	9-21	NP-6
	33-45	Bedrock			---	---	---	---	---	---	---	---
	45-55	Bedrock			---	---	---	---	---	---	---	---
39D:												
Marrowbone------	0-5	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-4, A-2	0	0	85-100	75-100	55-85	30-55	11-23	NP-7
	5-22	Gravelly sandy loam, fine sandy loam, sandy loam	SM, SC-SM	A-2, A-1, A-4	0	0	65-100	55-90	30-80	15-50	9-23	NP-7
	22-33	Very gravelly loamy fine sand, fine sandy loam, gravelly sandy loam, very gravelly loamy sand	SM, SC-SM, SW-SM	A-2, A-1, A-4	0	0-10	55-90	40-85	20-70	5-45	9-21	NP-6
	33-45	Bedrock			---	---	---	---	---	---	---	---
	45-55	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
39D:												
Gilpin----------	0-3	Silt loam	ML, CL, CL-ML, SM, SC, SC-SM	A-2, A-4, A-6	0	0	60-95	50-90	45-90	35-80	9-30	NP-11
	3-5	Silt loam, loam, gravelly loam	ML, CL, CL-ML, SM, SC, SC-SM	A-2, A-4, A-6	0	0-1	60-95	50-90	45-90	30-80	9-30	NP-11
	5-30	Gravelly silt loam, silty clay loam, silt loam, gravelly loam	CL, CL-ML, SC, SC-SM	A-6, A-2	0	0-3	65-95	50-90	45-90	30-85	23-39	7-16
	30-35	Very gravelly loam, very gravelly silt loam, extremely gravelly sandy loam, extremely gravelly loamy fine sand	SM, SC, SC-SM, GM, GC, GC-GM	A-1, A-2, A-6	0	0-10	35-65	15-50	10-50	5-45	9-30	NP-11
	35-39	Bedrock			---	---	---	---	---	---	---	---
	39-49	Bedrock			---	---	---	---	---	---	---	---
39E:												
Marrowbone------	0-5	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-4, A-2	0	0	85-100	75-100	55-85	30-55	11-23	NP-7
	5-22	Gravelly sandy loam, fine sandy loam, sandy loam	SM, SC-SM	A-2, A-1, A-4	0	0	65-100	55-90	30-80	15-50	9-23	NP-7
	22-33	Very gravelly loamy fine sand, fine sandy loam, gravelly sandy loam, very gravelly loamy sand	SM, SC-SM, SW-SM	A-2, A-1, A-4	0	0-10	55-90	40-85	20-70	5-45	9-21	NP-6
	33-45	Bedrock			---	---	---	---	---	---	---	---
	45-55	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
39E:												
Gilpin----------	0-3	Silt loam	ML, CL, CL-ML, SM, SC, SC-SM	A-2, A-4, A-6	0	0	60-95	50-90	45-90	35-80	9-30	NP-11
	3-5	Silt loam, loam, gravelly loam	ML, CL, CL-ML, SM, SC, SC-SM	A-2, A-4, A-6	0	0-1	60-95	50-90	45-90	30-80	9-30	NP-11
	5-30	Gravelly silt loam, silty clay loam, silt loam, gravelly loam	CL, CL-ML, SC, SC-SM	A-6, A-2	0	0-3	65-95	50-90	45-90	30-85	23-39	7-16
	30-35	Very gravelly loam, very gravelly silt loam, extremely gravelly sandy loam, extremely gravelly loamy fine sand	SM, SC, SC-SM, GM, GC, GC-GM	A-1, A-2, A-6	0	0-10	35-65	15-50	10-50	5-45	9-30	NP-11
	35-39	Bedrock			---	---	---	---	---	---	---	---
	39-49	Bedrock			---	---	---	---	---	---	---	---
39F:												
Marrowbone------	0-5	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-4, A-2	0	0	85-100	75-100	55-85	30-55	11-23	NP-7
	5-22	Gravelly sandy loam, fine sandy loam, sandy loam	SM, SC-SM	A-2, A-1, A-4	0	0	65-100	55-90	30-80	15-50	9-23	NP-7
	22-33	Very gravelly loamy fine sand, fine sandy loam, gravelly sandy loam, very gravelly loamy sand	SM, SC-SM, SW-SM	A-2, A-1, A-4	0	0-10	55-90	40-85	20-70	5-45	9-21	NP-6
	33-45	Bedrock			---	---	---	---	---	---	---	---
	45-55	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
39F:												
Gilpin----------	0-3	Silt loam	ML, CL, CL-ML, SM, SC, SC-SM	A-2, A-4, A-6	0	0	60-95	50-90	45-90	35-80	9-30	NP-11
	3-5	Silt loam, loam, gravelly loam	ML, CL, CL-ML, SM, SC, SC-SM	A-2, A-4, A-6	0	0-1	60-95	50-90	45-90	30-80	9-30	NP-11
	5-30	Gravelly silt loam, silty clay loam, silt loam, gravelly loam	CL, CL-ML, SC, SC-SM	A-6, A-2	0	0-3	65-95	50-90	45-90	30-85	23-39	7-16
	30-35	Very gravelly loam, very gravelly silt loam, extremely gravelly sandy loam, extremely gravelly loamy fine sand	SM, SC, SC-SM, GM, GC, GC-GM	A-1, A-2, A-6	0	0-10	35-65	15-50	10-50	5-45	9-30	NP-11
	35-39	Bedrock			---	---	---	---	---	---	---	---
	39-49	Bedrock			---	---	---	---	---	---	---	---
40F:												
Matewan---------	0-4	Flaggy fine sandy loam	SM, SC, SC-SM	A-4	0-5	5-20	80-90	75-85	55-70	30-50	10-25	NP-8
	4-21	Very flaggy fine sandy loam, very flaggy sandy loam, very channery loam	SM, SC-SM	A-2, A-4, A-1	5-15	15-30	65-75	55-70	30-65	15-50	12-23	1-7
	21-38	Very gravelly sandy loam, extremely gravelly sandy loam, extremely channery loamy sand, extremely gravelly loam	GM, GC-GM, GP-GM, SC-SM, SM	A-1, A-2	0-15	5-20	40-60	20-50	10-50	5-40	10-21	NP-6
	38-48	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
41A:												
Ogles-----------	0-6	Very stony loam	CL-ML, ML, SC-SM	A-4	25-35	30-35	75-100	70-100	60-95	40-75	13-23	1-7
	6-10	Very stony loam, extremely stony loam	CL-ML, ML, SC-SM	A-4	25-40	30-45	60-100	45-100	35-95	25-75	13-23	1-7
	10-23	Extremely stony sandy loam, very stony loam	SC-SM, CL-ML	A-2-4, A-1	25-40	30-45	60-100	45-100	25-95	15-75	12-23	1-7
	23-65	Extremely stony loamy sand, very stony sandy loam	SC-SM	A-2-4, A-1	25-45	30-45	70-100	60-100	30-75	8-40	12-23	1-7
42C:												
Oriskany--------	0-6	Very cobbly fine sandy loam	SM, SC-SM, SC	A-2-4, A-1	0-15	20-30	55-70	40-60	30-50	15-35	12-25	1-8
	6-17	Very cobbly fine sandy loam, very gravelly loam, extremely cobbly sandy loam	SM, SC-SM, SC	A-2-4, A-1, A-4	0-15	20-30	55-70	35-60	20-55	10-45	13-31	1-11
	17-70	Very cobbly loam, very gravelly loam, very cobbly clay loam, very cobbly sandy clay loam, very gravelly clay loam, extremely stony loam	SC, SC-SM	A-4, A-2-6, A-6, A-2-4	0-20	15-30	50-65	30-60	25-55	10-45	21-39	6-16

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
42D:												
Oriskany--------	0-6	Very cobbly fine sandy loam	SM, SC-SM, SC	A-2-4, A-1	0-15	20-30	55-70	40-60	30-50	15-35	12-25	1-8
	6-17	Very cobbly fine sandy loam, very gravelly loam, extremely cobbly sandy loam	SM, SC-SM, SC	A-2-4, A-1, A-4	0-15	20-30	55-70	35-60	20-55	10-45	13-31	1-11
	17-70	Very cobbly loam, very gravelly loam, very cobbly clay loam, very cobbly sandy clay loam, very gravelly clay loam, extremely stony loam	SC, SC-SM	A-4, A-2-6, A-6, A-2-4	0-20	15-30	50-65	30-60	25-55	10-45	21-39	6-16
42E:												
Oriskany--------	0-6	Very cobbly fine sandy loam	SM, SC-SM, SC	A-2-4, A-1	0-15	20-30	55-70	40-60	30-50	15-35	12-25	1-8
	6-17	Very cobbly fine sandy loam, very gravelly loam, extremely cobbly sandy loam	SM, SC-SM, SC	A-2-4, A-1, A-4	0-15	20-30	55-70	35-60	20-55	10-45	13-31	1-11
	17-70	Very cobbly loam, very gravelly loam, very cobbly clay loam, very cobbly sandy clay loam, very gravelly clay loam, extremely stony loam	SC, SC-SM	A-4, A-2-6, A-6, A-2-4	0-20	15-30	50-65	30-60	25-55	10-45	21-39	6-16

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
43. Pits, quarry												
44C:												
Poplimento------	0-5	Silty clay loam	CL	A-6	0	0-5	85-100	80-100	75-100	70-95	31-43	11-18
	5-20	Silty clay, clay, silty clay loam	CL, ML, CH, MH	A-7	0	0-5	85-100	80-100	75-100	60-95	39-61	16-28
	20-35	Silty clay, channery clay, very channery silty clay loam	CL, CH, MH, ML, SM, SC	A-7, A-2-7	0	0-10	50-100	35-100	35-100	30-95	39-61	16-28
	35-60	Silty clay loam, channery silty clay, very channery silty clay loam	CL, SC	A-6, A-7, A-2-6	0	0-15	50-100	35-100	35-100	30-95	31-52	11-23
Westmoreland----	0-6	Silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-95	80-95	70-95	55-85	18-31	4-11
	6-36	Silty clay loam, channery silty clay loam, channery silt loam	CL, SC	A-6, A-4	0	0-10	70-95	60-95	55-95	45-90	23-39	7-16
	36-54	Very channery silt loam, very channery silty clay loam, extremely channery silt loam	GC, GW-GC	A-2-6, A-2-4, A-7-6, A-1	0	5-20	25-50	5-40	5-40	5-40	18-43	4-18
	54-64	Bedrock			---	---	---	---	---	---	---	---
45F:												
Ramsey----------	0-5	Sandy loam	SC-SM	A-2-4	0-2	0-3	90-100	80-100	50-70	25-40	12-21	1-6
	5-17	Sandy loam, loam, gravelly sandy loam	SC-SM, CL-ML	A-2-4	0-3	0-4	65-95	55-90	30-85	15-70	12-23	1-7
	17-27	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
46F: Rock outcrop.												
Beech Grove-----	0-4	Channery silt loam	SC, SC-SM, CL, CL-ML	A-4, A-6	0	0-5	60-80	50-75	45-75	35-65	21-36	4-16
	4-14	Bedrock			---	---	---	---	---	---	---	---
Benthole--------	0-3	Gravelly silt loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0-10	0-7	70-85	58-72	52-72	41-65	21-36	4-16
	3-37	Very cobbly silty clay loam, very gravelly silty clay loam, extremely cobbly loam	CL, SC, GC	A-6, A-7, A-2-4	0-15	30-40	45-70	42-66	36-66	25-63	28-44	9-22
	37-63	Very cobbly silty clay loam, very gravelly silty clay loam, extremely stony loam	CL, SC, GC	A-6, A-7, A-2-4	7-20	25-35	45-70	42-66	36-66	25-63	28-44	9-22
47F: Sewell----------	0-4	Channery sandy loam	SC-SM, SM	A-1, A-2	0-10	5-20	75-85	60-80	35-55	20-35	15-25	NP-7
	4-9	Very channery sandy loam, very channery fine sandy loam, extremely stony loam	GW-GM, GC-GM, GM, SM, SC-SM	A-1, A-2, A-4	10-40	10-40	40-70	20-60	15-55	10-45	15-25	NP-7
	9-65	Extremely channery sandy loam, very channery fine sandy loam, extremely stony loam	GW-GM, GC-GM, GM, SM, SC-SM	A-1, A-2, A-4	10-30	10-40	40-70	20-60	15-55	10-45	15-25	NP-7

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
47F:												
Kaymine---------	0-4	Very channery silt loam	SC-SM, SM, SC, GC-GM, GC, GM	A-1, A-2, A-4	0	2-10	45-65	30-50	30-50	20-45	13-25	1-8
	4-28	Extremely channery silt loam, very channery silt loam, extremely channery loam, stony loam	SC-SM, SM, SC, GC-GM, GC, GM	A-1, A-2, A-4	0-15	10-25	40-70	20-60	20-60	10-50	13-30	1-11
	28-64	Very flaggy silt loam, very channery silt loam, extremely channery loam, very stony loam	SC-SM, SM, SC, ML, GC-GM, GC, GM, CL-ML, CL	A-1, A-2, A-4	10-25	10-35	45-80	30-70	25-70	20-65	13-30	1-11
Rock outcrop.												
48E:												
Shelocta--------	0-4	Gravelly loam	SC-SM, SM, SC	A-4, A-2	0	0-5	60-80	50-70	40-70	30-55	13-30	1-11
	4-13	Loam, silty clay loam, gravelly silt loam	CL-ML, ML, CL, SM, SC, SC-SM	A-4, A-2, A-6	0	0-10	60-95	50-90	40-90	30-85	13-39	1-16
	13-50	Gravelly loam, gravelly silt loam, silty clay loam, very gravelly silt loam	SC, SC-SM, CL, CL-ML	A-6, A-4, A-2	0-5	0-15	60-95	45-90	40-90	30-85	23-39	7-16
	50-86	Very gravelly loam, extremely gravelly loam, gravelly silty clay loam, cobbly clay loam	SC, SC-SM, SM, CL, CL-ML, ML	A-2, A-1, A-4, A-6	0-5	0-15	50-80	35-75	30-75	20-70	13-39	1-16

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
48E:												
Cedarcreek------	0-3	Very channery loam	SC	A-2, A-4	0-5	10-20	50-65	35-55	30-50	20-40	21-31	6-11
	3-15	Very channery loam, very channery silt loam, stony loam, extremely channery fine sandy loam	SC, GW-GC, GC	A-2, A-4	0-15	10-30	40-65	15-55	15-55	5-50	21-31	6-11
	15-65	Extremely channery loam, extremely channery silt loam, very stony loam, extremely channery fine sandy loam	GC, GW-GC, SC	A-2, A-4	0-25	10-35	40-65	20-55	15-55	5-50	23-31	7-11
49E:												
Shelocta--------	0-4	Gravelly loam	SC-SM, SM, SC	A-4, A-2	0	0-5	60-80	50-70	40-70	30-55	13-30	1-11
	4-13	Loam, silty clay loam, gravelly silt loam	CL-ML, ML, CL, SM, SC, SC-SM	A-4, A-2, A-6	0	0-10	60-95	50-90	40-90	30-85	13-39	1-16
	13-50	Gravelly loam, gravelly silt loam, silty clay loam, very gravelly silt loam	SC, SC-SM, CL, CL-ML	A-6, A-4, A-2	0-5	0-15	60-95	45-90	40-90	30-85	23-39	7-16
	50-86	Very gravelly loam, extremely gravelly loam, gravelly silty clay loam, cobbly clay loam	SC, SC-SM, SM, CL, CL-ML, ML	A-2, A-1, A-4, A-6	0-5	0-15	50-80	35-75	30-75	20-70	13-39	1-16

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
49E:												
Highsplint------	0-3	Channery silt loam	CL-ML, ML, CL, SC-SM, SM, SC	A-4	0-3	0-15	70-85	60-80	50-75	40-70	12-25	1-8
	3-59	Very channery silt loam, channery silt loam, very flaggy silt loam, channery silty clay loam, very channery clay loam	SC-SM, SM, SC, CL-ML, ML, CL	A-4, A-6, A-2	0-10	10-30	60-85	45-80	40-75	30-70	12-34	1-13
	59-82	Very channery loam, very gravelly fine sandy loam, very channery sandy loam, extremely flaggy silt loam	SC-SM, SC, SM, SP-SM, SP-SC	A-2, A-4, A-1	0-10	15-30	50-70	30-60	20-60	10-55	12-30	1-11
50F:												
Shelocta--------	0-4	Gravelly loam	SC-SM, SM, SC	A-4, A-2	0	0-5	60-80	50-70	40-70	30-55	13-30	1-11
	4-13	Loam, silty clay loam, gravelly silt loam	CL-ML, ML, CL, SM, SC, SC-SM	A-4, A-2, A-6	0	0-10	60-95	50-90	40-90	30-85	13-39	1-16
	13-50	Gravelly loam, gravelly silt loam, silty clay loam, very gravelly silt loam	SC, SC-SM, CL, CL-ML	A-6, A-4, A-2	0-5	0-15	60-95	45-90	40-90	30-85	23-39	7-16
	50-86	Very gravelly loam, extremely gravelly loam, gravelly silty clay loam, cobbly clay loam	SC, SC-SM, SM, CL, CL-ML, ML	A-2, A-1, A-4, A-6	0-5	0-15	50-80	35-75	30-75	20-70	13-39	1-16

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
50F:												
Kaymine---------	0-4	Very channery silt loam	SC-SM, SM, SC, GC-GM, GC, GM	A-1, A-2, A-4	0	2-10	45-65	30-50	30-50	20-45	13-25	1-8
	4-28	Extremely channery silt loam, very channery silt loam, extremely channery loam, stony loam	SC-SM, SM, SC, GC-GM, GC, GM	A-1, A-2, A-4	0-15	10-25	40-70	20-60	20-60	10-50	13-30	1-11
	28-64	Very flaggy silt loam, very channery silt loam, extremely channery loam, very stony loam	SC-SM, SM, SC, GC-GM, ML, GC, GM, CL-ML, CL	A-1, A-2, A-4	10-25	10-35	45-80	30-70	25-70	20-65	13-30	1-11
51F:												
Stonecoal-------	0-31	Extremely channery sandy loam, extremely channery loamy sand, very channery fine sandy loam	GW-GM, GW, SM, GM	A-1, A-2	0-1	20-35	35-65	15-55	10-45	3-30	11-16	NP-3
	31-39	Extremely channery sandy loam, extremely channery loamy sand, very channery fine sandy loam	GW-GM, GW, SM, SC-SM, GM, GC-GM	A-1, A-2	0-1	20-35	35-65	15-55	10-45	3-30	11-20	NP-6
	39-68	Extremely channery loamy sand, extremely channery sandy loam, very channery fine sandy loam	GW, GW-GM, SM, GM	A-1, A-2	0-1	20-35	35-65	15-55	10-45	2-30	9-16	NP-3

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
52C:												
Tumbling--------	0-6	Loam	ML, CL-ML, CL	A-4	0-8	0-8	95-100	90-100	75-95	55-75	13-25	2-9
	6-19	Clay loam, clay, cobbly clay loam, silty clay loam	CL	A-6, A-7	0-7	0-36	90-100	90-100	80-100	60-95	31-42	13-18
	19-47	Clay, cobbly clay, cobbly clay loam, silty clay loam	CL	A-6, A-7	0-7	0-36	90-100	90-100	80-100	60-95	31-42	13-18
	47-65	Cobbly clay, clay, cobbly clay loam, silty clay loam	CL	A-6, A-7	0-7	0-36	90-100	90-100	80-100	60-95	31-42	13-18
52D:												
Tumbling--------	0-6	Loam	ML, CL-ML, CL	A-4	0-8	0-8	95-100	90-100	75-95	55-75	13-25	2-9
	6-19	Clay loam, clay, cobbly clay loam, silty clay loam	CL	A-6, A-7	0-7	0-36	90-100	90-100	80-100	60-95	31-42	13-18
	19-47	Clay, cobbly clay, cobbly clay loam, silty clay loam	CL	A-6, A-7	0-7	0-36	90-100	90-100	80-100	60-95	31-42	13-18
	47-65	Cobbly clay, clay, cobbly clay loam, silty clay loam	CL	A-6, A-7	0-7	0-36	90-100	90-100	80-100	60-95	31-42	13-18

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
53E:												
Tumbling--------	0-6	Loam	ML, CL-ML, CL	A-4	0-8	0-8	95-100	90-100	75-95	55-75	13-25	2-9
	6-19	Clay loam, clay, cobbly clay loam, silty clay loam	CL	A-6, A-7	0-7	0-36	90-100	90-100	80-100	60-95	31-42	13-18
	19-47	Clay, cobbly clay, cobbly clay loam, silty clay loam	CL	A-6, A-7	0-7	0-36	90-100	90-100	80-100	60-95	31-42	13-18
	47-65	Cobbly clay, clay, cobbly clay loam, silty clay loam	CL	A-6, A-7	0-7	0-36	90-100	90-100	80-100	60-95	31-42	13-18
54F. Udorthents-Urban land												
55D:												
Wallen----------	0-4	Channery sandy loam	SC-SM, SC	A-2	0	0-10	50-90	50-75	30-55	15-30	20-35	4-13
	4-24	Very channery sandy loam, very cobbly loam, very cobbly fine sandy loam, extremely channery sandy loam	GC, SC-SM, GC-GM	A-1, A-2, A-4	0	15-45	35-70	25-60	15-55	10-45	18-32	4-13
	24-34	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
55F:												
Wallen----------	0-4	Channery sandy loam	SC-SM, SC	A-2	0	0-10	50-90	50-75	30-55	15-30	20-35	4-13
	4-24	Very channery sandy loam, very cobbly loam, very cobbly fine sandy loam, extremely channery sandy loam	GC-GM, GC, SC-SM	A-1, A-2, A-4	0	15-45	35-70	25-60	15-55	10-45	18-32	4-13
	24-34	Bedrock			---	---	---	---	---	---	---	---
56D:												
Wallen----------	0-4	Channery sandy loam	SC-SM, SC	A-2	0	0-10	50-90	50-75	30-55	15-30	20-35	4-13
	4-24	Very channery sandy loam, very cobbly loam, very cobbly fine sandy loam, extremely channery sandy loam	SC-SM, GC-GM, GC	A-1, A-2, A-4	0	15-45	35-70	25-60	15-55	10-45	18-32	4-13
	24-34	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
56F:												
Wallen----------	0-4	Channery sandy loam	SC-SM, SC	A-2	0	0-10	50-90	50-75	30-55	15-30	20-35	4-13
	4-24	Very channery sandy loam, very cobbly loam, very cobbly fine sandy loam, extremely channery sandy loam	SC-SM, GC, GC-GM	A-1, A-2, A-4	0	15-45	35-70	25-60	15-55	10-45	18-32	4-13
	24-34	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
57C:												
Watahala--------	0-4	Gravelly silt loam	SC, SC-SM, CL, CL-ML	A-4	0	0-7	65-80	55-75	50-70	40-65	16-31	3-11
	4-28	Very gravelly loam, gravelly silt loam, silt loam	SC, SC-SM, CL, CL-ML	A-2-4, A-4	0	0-7	55-85	45-80	35-80	25-70	16-31	3-11
	28-42	Gravelly silty clay loam, silty clay loam, very gravelly loam	CL, SC	A-6, A-2-4	0	0-7	55-85	45-80	35-80	25-75	23-39	7-16
	42-60	Silty clay, clay, gravelly silty clay	MH, ML, CH, SM, SC	A-7	0	0-3	60-100	50-100	45-100	40-95	45-70	20-33
57D:												
Watahala--------	0-4	Gravelly silt loam	SC, SC-SM, CL, CL-ML	A-4	0	0-7	65-80	55-75	50-70	40-65	16-31	3-11
	4-28	Very gravelly loam, gravelly silt loam, silt loam	SC, SC-SM, CL, CL-ML	A-2-4, A-4	0	0-7	55-85	45-80	35-80	25-70	16-31	3-11
	28-42	Gravelly silty clay loam, silty clay loam, very gravelly loam	CL, SC	A-6, A-2-4	0	0-7	55-85	45-80	35-80	25-75	23-39	7-16
	42-60	Silty clay, clay, gravelly silty clay	MH, ML, CH, SM, SC	A-7	0	0-3	60-100	50-100	45-100	40-95	45-70	20-33
57E:												
Watahala--------	0-4	Gravelly silt loam	SC, SC-SM, CL, CL-ML	A-4	0	0-7	65-80	55-75	50-70	40-65	16-31	3-11
	4-28	Very gravelly loam, gravelly silt loam, silt loam	SC, SC-SM, CL, CL-ML	A-2-4, A-4	0	0-7	55-85	45-80	35-80	25-70	16-31	3-11
	28-42	Gravelly silty clay loam, silty clay loam, very gravelly loam	CL, SC	A-6, A-2-4	0	0-7	55-85	45-80	35-80	25-75	23-39	7-16
	42-60	Silty clay, clay, gravelly silty clay	MH, ML, CH, SM, SC	A-7	0	0-3	60-100	50-100	45-100	40-95	45-70	20-33

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	Percentage passing sieve number--: 10	Percentage passing sieve number--: 40	Percentage passing sieve number--: 200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
57F:												
Watahala--------	0-4	Gravelly silt loam	SC, SC-SM, CL, CL-ML	A-4	0	0-7	65-80	55-75	50-70	40-65	16-31	3-11
	4-28	Very gravelly loam, gravelly silt loam, silt loam	SC, SC-SM, CL, CL-ML	A-2-4, A-4	0	0-7	55-85	45-80	35-80	25-70	16-31	3-11
	28-42	Gravelly silty clay loam, silty clay loam, very gravelly loam	CL, SC	A-6, A-2-4	0	0-7	55-85	45-80	35-80	25-75	23-39	7-16
	42-60	Silty clay, clay, gravelly silty clay	MH, ML, CH, SM, SC	A-7	0	0-3	60-100	50-100	45-100	40-95	45-70	20-33
58D:												
Watahala--------	0-4	Gravelly silt loam	SC, SC-SM, CL, CL-ML	A-4	0	0-7	65-80	55-75	50-70	40-65	16-31	3-11
	4-28	Very gravelly loam, gravelly silt loam, silt loam	SC, SC-SM, CL, CL-ML	A-2-4, A-4	0	0-7	55-85	45-80	35-80	25-70	16-31	3-11
	28-42	Gravelly silty clay loam, silty clay loam, very gravelly loam	CL, SC	A-6, A-2-4	0	0-7	55-85	45-80	35-80	25-75	23-39	7-16
	42-60	Silty clay, clay, gravelly silty clay	MH, ML, CH, SM, SC	A-7	0	0-3	60-100	50-100	45-100	40-95	45-70	20-33
58E:												
Watahala--------	0-4	Gravelly silt loam	SC, SC-SM, CL, CL-ML	A-4	0	0-7	65-80	55-75	50-70	40-65	16-31	3-11
	4-28	Very gravelly loam, gravelly silt loam, silt loam	SC, SC-SM, CL, CL-ML	A-2-4, A-4	0	0-7	55-85	45-80	35-80	25-70	16-31	3-11
	28-42	Gravelly silty clay loam, silty clay loam, very gravelly loam	CL, SC	A-6, A-2-4	0	0-7	55-85	45-80	35-80	25-75	23-39	7-16
	42-60	Silty clay, clay, gravelly silty clay	MH, ML, CH, SM, SC	A-7	0	0-3	60-100	50-100	45-100	40-95	45-70	20-33

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
59D:												
Wharton---------	0-2	Silt loam	CL-ML, CL, ML	A-4, A-6	0	0-1	90-100	85-100	75-100	60-90	16-30	3-11
	2-9	Silt loam, silty clay loam, loam	CL-ML, CL, ML	A-4, A-6	0	0-2	90-100	85-100	70-100	50-95	16-34	3-13
	9-35	Silty clay loam, silt loam, loam	CL, CL-ML	A-6, A-4	0	0-2	90-100	85-100	70-100	50-95	23-39	7-16
	35-55	Silt loam, channery silt loam, very channery loam	CL-ML, CL, SC, SC-SM	A-2, A-4, A-6	0	0-10	65-95	50-95	40-95	30-85	18-31	4-11
	55-65	Silt loam, silty clay loam, very channery loam, channery sandy loam	CL-ML, CL, ML, SM, SC, SC-SM	A-1, A-2, A-4, A-6	0	0-10	55-90	40-90	40-85	10-80	12-34	1-13
	65-75	Bedrock			---	---	---	---	---	---	---	---
Gilpin----------	0-3	Silt loam	ML, CL, CL-ML, SM, SC, SC-SM	A-2, A-4, A-6	0	0	60-95	50-90	45-90	35-80	9-30	NP-11
	3-5	Silt loam, loam, gravelly loam	ML, CL, CL-ML, SM, SC, SC-SM	A-2, A-4, A-6	0	0-1	60-95	50-90	45-90	30-80	9-30	NP-11
	5-30	Gravelly silt loam, silty clay loam, silt loam, gravelly loam	CL, CL-ML, SC, SC-SM	A-6, A-2	0	0-3	65-95	50-90	45-90	30-85	23-39	7-16
	30-35	Very gravelly loam, very gravelly silt loam, extremely gravelly sandy loam, extremely gravelly loamy fine sand	SM, SC, SC-SM, GM, GC, GC-GM	A-1, A-2, A-6	0	0-10	35-65	15-50	10-50	5-45	9-30	NP-11
	35-39	Bedrock			---	---	---	---	---	---	---	---
	39-49	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
59D:												
Berks-----------	0-4	Silt loam	CL-ML, ML, CL	A-4	0	0	75-100	70-100	60-100	45-90	12-30	1-11
	4-8	Channery silt loam, very channery loam, channery silty clay loam	CL-ML, CL, ML, SM, SC, SC-SM, GM, GC, GC-GM	A-4, A-1, A-2, A-6	0	0-5	45-80	30-75	25-70	15-70	12-34	1-13
	8-23	Very channery silt loam, very channery loam, very channery silty clay loam	SC-SM, SC, SM	A-4, A-1, A-2, A-6	0	0-20	50-65	30-50	30-50	20-50	12-34	1-13
	23-34	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, GC, GM, SC-SM, SM, SC	A-1, A-2, A-4	0-1	0-25	35-65	15-50	15-50	10-45	12-25	1-8
	34-36	Bedrock			---	---	---	---	---	---	---	---
	36-46	Bedrock			---	---	---	---	---	---	---	---
60C:												
Wharton---------	0-2	Silt loam	CL-ML, CL, ML	A-4, A-6	0	0-1	90-100	85-100	75-100	60-90	16-30	3-11
	2-9	Silt loam, silty clay loam, loam	CL-ML, CL, ML	A-4, A-6	0	0-2	90-100	85-100	70-100	50-95	16-34	3-13
	9-35	Silty clay loam, silt loam, loam	CL, CL-ML	A-6, A-4	0	0-2	90-100	85-100	70-100	50-95	23-39	7-16
	35-55	Silt loam, channery silt loam, very channery loam	CL-ML, CL, SC, SC-SM	A-2, A-4, A-6	0	0-10	65-95	50-95	40-95	30-85	18-31	4-11
	55-65	Silt loam, silty clay loam, very channery loam, channery sandy loam	CL-ML, CL, ML, SM, SC, SC-SM	A-1, A-2, A-4, A-6	0	0-10	55-90	40-90	40-85	10-80	12-34	1-13
	65-75	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
60C:												
Gilpin----------	0-3	Silt loam	ML, CL, CL-ML, SM, SC, SC-SM	A-2, A-4, A-6	0	0	60-95	50-90	45-90	35-80	9-30	NP-11
	3-5	Silt loam, loam, gravelly loam	ML, CL, CL-ML, SM, SC, SC-SM	A-2, A-4, A-6	0	0-1	60-95	50-90	45-90	30-80	9-30	NP-11
	5-30	Gravelly silt loam, silty clay loam, silt loam, gravelly loam	CL, CL-ML, SC, SC-SM	A-6, A-2	0	0-3	65-95	50-90	45-90	30-85	23-39	7-16
	30-35	Very gravelly loam, very gravelly silt loam, extremely gravelly sandy loam, extremely gravelly loamy fine sand	SM, SC, SC-SM, GM, GC, GC-GM	A-1, A-2, A-6	0	0-10	35-65	15-50	10-50	5-45	9-30	NP-11
	35-39	Bedrock			---	---	---	---	---	---	---	---
	39-49	Bedrock			---	---	---	---	---	---	---	---
Marrowbone------	0-5	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-4, A-2	0	0	85-100	75-100	55-85	30-55	11-23	NP-7
	5-22	Gravelly sandy loam, fine sandy loam, sandy loam	SM, SC-SM	A-2, A-1, A-4	0	0	65-100	55-90	30-80	15-50	9-23	NP-7
	22-33	Very gravelly loamy fine sand, fine sandy loam, gravelly sandy loam, very gravelly loamy sand	SM, SC-SM, SW-SM	A-2, A-1, A-4	0	0-10	55-90	40-85	20-70	5-45	9-21	NP-6
	33-45	Bedrock			---	---	---	---	---	---	---	---
	45-55	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
61B:												
Wyrick----------	0-9	Silt loam	CL, CL-ML	A-4	0	0-1	80-100	80-100	70-100	55-90	21-31	6-11
	9-60	Silty clay loam, clay loam, silt loam, loam	CL	A-6, A-4	0	0-1	85-100	80-100	65-100	45-95	25-39	8-16
Marbie----------	0-6	Silt loam	CL, CL-ML	A-4	0	0-1	80-100	75-100	70-100	55-90	21-31	6-11
	6-36	Silt loam, silty clay loam, loam	CL	A-6, A-4	0	0-1	80-100	80-100	65-100	45-95	25-39	8-16
	36-60	Silt loam, silty clay loam, gravelly loam	CL	A-6	0	0-1	65-100	55-100	50-100	35-95	25-39	8-16
	60-70	Silty clay, clay, gravelly clay loam	ML, CH, MH	A-7, A-6	0	0-1	70-100	65-100	60-100	45-95	30-57	11-26
61C:												
Wyrick----------	0-9	Silt loam	CL, CL-ML	A-4	0	0-1	80-100	80-100	70-100	55-90	21-31	6-11
	9-60	Silty clay loam, clay loam, silt loam, loam	CL	A-6, A-4	0	0-1	85-100	80-100	65-100	45-95	25-39	8-16
Marbie----------	0-6	Silt loam	CL, CL-ML	A-4	0	0-1	80-100	75-100	70-100	55-90	21-31	6-11
	6-36	Silt loam, silty clay loam, loam	CL	A-6, A-4	0	0-1	80-100	80-100	65-100	45-95	25-39	8-16
	36-60	Silt loam, silty clay loam, gravelly loam	CL	A-6	0	0-1	65-100	55-100	50-100	35-95	25-39	8-16
	60-70	Silty clay, clay, gravelly clay loam	ML, CH, MH	A-7, A-6	0	0-1	70-100	65-100	60-100	45-95	30-57	11-26
W.												
Water												

Table 16.—Physical Soil Properties

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
1E:														
Berks-----------	0-6	5-48	51-80	10-27	1.20-1.50	4.00-42.00	0.12-0.17	0.0-2.9	0.5-2.0	.28	.43	2	5	48
	6-22	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.17	0.0-2.9	0.0-0.5	.20	.49			
	22-32	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.11	0.0-2.9	0.0-0.5	.17	.49			
	32-38	5-51	29-80	5-20	1.20-1.60	14.00-42.00	0.03-0.08	0.0-2.9	0.0-0.5	.05	.55			
	38-48	---	---	---	---	1.40-42.00	---	---	---	---	---			
Chiswell--------	0-2	5-48	51-80	10-25	1.20-1.40	4.00-14.00	0.07-0.11	0.0-2.9	0.5-2.0	.17	.43	2	5	38
	2-7	5-51	29-80	10-25	1.20-1.60	4.00-14.00	0.03-0.14	0.0-2.9	0.0-0.5	.17	.49			
	7-12	5-51	29-80	5-25	1.20-1.60	4.00-14.00	0.01-0.09	0.0-2.9	0.0-0.5	.15	.49			
	12-22	---	---	---	---	1.40-42.00	---	---	---	---	---			
1F:														
Berks-----------	0-6	5-48	51-80	10-27	1.20-1.50	4.00-42.00	0.12-0.17	0.0-2.9	0.5-2.0	.28	.43	2	5	48
	6-22	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.17	0.0-2.9	0.0-0.5	.20	.49			
	22-32	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.11	0.0-2.9	0.0-0.5	.17	.49			
	32-38	5-51	29-80	5-20	1.20-1.60	14.00-42.00	0.03-0.08	0.0-2.9	0.0-0.5	.05	.55			
	38-48	---	---	---	---	1.40-42.00	---	---	---	---	---			
Chiswell--------	0-2	5-48	51-80	10-25	1.20-1.40	4.00-14.00	0.07-0.11	0.0-2.9	0.5-2.0	.17	.43	2	5	38
	2-7	5-51	29-80	10-25	1.20-1.60	4.00-14.00	0.03-0.14	0.0-2.9	0.0-0.5	.17	.49			
	7-12	5-51	29-80	5-25	1.20-1.60	4.00-14.00	0.01-0.09	0.0-2.9	0.0-0.5	.15	.49			
	12-22	---	---	---	---	1.40-42.00	---	---	---	---	---			
2D:														
Berks-----------	0-6	5-48	51-80	10-27	1.20-1.50	4.00-42.00	0.12-0.17	0.0-2.9	0.5-2.0	.28	.43	2	5	48
	6-22	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.17	0.0-2.9	0.0-0.5	.20	.49			
	22-32	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.11	0.0-2.9	0.0-0.5	.17	.49			
	32-38	5-51	29-80	5-20	1.20-1.60	14.00-42.00	0.03-0.08	0.0-2.9	0.0-0.5	.05	.55			
	38-48	---	---	---	---	1.40-42.00	---	---	---	---	---			
Gilpin----------	0-3	10-35	51-80	15-27	1.20-1.40	4.00-14.00	0.17-0.22	0.0-2.9	0.5-2.5	.32	.37	3	6	48
	3-7	10-50	29-80	15-27	1.20-1.40	4.00-14.00	0.14-0.20	0.0-2.9	0.0-1.0	.43	.49			
	7-31	10-50	29-80	18-35	1.20-1.50	4.00-14.00	0.09-0.20	0.0-2.9	0.0-0.5	.28	.37			
	31-41	---	---	---	---	1.40-42.00	---	---	---	---	---			
2E:														
Berks-----------	0-6	5-48	51-80	10-27	1.20-1.50	4.00-42.00	0.12-0.17	0.0-2.9	0.5-2.0	.28	.43	2	5	48
	6-22	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.17	0.0-2.9	0.0-0.5	.20	.49			
	22-32	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.11	0.0-2.9	0.0-0.5	.17	.49			
	32-38	5-51	29-80	5-20	1.20-1.60	14.00-42.00	0.03-0.08	0.0-2.9	0.0-0.5	.05	.55			
	38-48	---	---	---	---	1.40-42.00	---	---	---	---	---			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
2E:														
Gilpin----------	0-3	10-35	51-80	15-27	1.20-1.40	4.00-14.00	0.17-0.22	0.0-2.9	0.5-2.5	.32	.37	3	6	48
	3-7	10-50	29-80	15-27	1.20-1.40	4.00-14.00	0.14-0.20	0.0-2.9	0.0-1.0	.43	.49			
	7-31	10-50	29-80	18-35	1.20-1.50	4.00-14.00	0.09-0.20	0.0-2.9	0.0-0.5	.28	.37			
	31-41	---	---	---	---	1.40-42.00	---	---	---	---	---			
2F:														
Berks-----------	0-6	5-48	51-80	10-27	1.20-1.50	4.00-42.00	0.12-0.17	0.0-2.9	0.5-2.0	.28	.43	2	5	48
	6-22	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.17	0.0-2.9	0.0-0.5	.20	.49			
	22-32	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.11	0.0-2.9	0.0-0.5	.17	.49			
	32-38	5-51	29-80	5-20	1.20-1.60	14.00-42.00	0.03-0.08	0.0-2.9	0.0-0.5	.05	.55			
	38-48	---	---	---	---	1.40-42.00	---	---	---	---	---			
Gilpin----------	0-3	10-35	51-80	15-27	1.20-1.40	4.00-14.00	0.17-0.22	0.0-2.9	0.5-2.5	.32	.37	3	6	48
	3-7	10-50	29-80	15-27	1.20-1.40	4.00-14.00	0.14-0.20	0.0-2.9	0.0-1.0	.43	.49			
	7-31	10-50	29-80	18-35	1.20-1.50	4.00-14.00	0.09-0.20	0.0-2.9	0.0-0.5	.28	.37			
	31-41	---	---	---	---	1.40-42.00	---	---	---	---	---			
3C:														
Berks-----------	0-6	5-48	51-80	10-27	1.20-1.50	4.00-42.00	0.12-0.17	0.0-2.9	0.5-2.0	.28	.43	2	5	48
	6-22	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.17	0.0-2.9	0.0-0.5	.20	.49			
	22-32	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.11	0.0-2.9	0.0-0.5	.17	.49			
	32-38	5-51	29-80	5-20	1.20-1.60	14.00-42.00	0.03-0.08	0.0-2.9	0.0-0.5	.05	.55			
	38-48	---	---	---	---	1.40-42.00	---	---	---	---	---			
Groseclose------	0-10	5-19	42-70	27-40	1.25-1.55	4.00-14.00	0.14-0.15	3.0-5.9	0.5-2.5	.28	.28	4	4	86
	10-33	5-44	5-70	35-60	1.35-1.60	0.42-1.40	0.11-0.15	6.0-8.9	0.0-0.5	.28	.32			
	33-62	5-48	42-80	15-40	1.35-1.60	0.42-1.40	0.08-0.22	3.0-5.9	0.0-0.5	.24	.49			
3D:														
Berks-----------	0-6	5-48	51-80	10-27	1.20-1.50	4.00-42.00	0.12-0.17	0.0-2.9	0.5-2.0	.28	.43	2	5	48
	6-22	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.17	0.0-2.9	0.0-0.5	.20	.49			
	22-32	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.11	0.0-2.9	0.0-0.5	.17	.49			
	32-38	5-51	29-80	5-20	1.20-1.60	14.00-42.00	0.03-0.08	0.0-2.9	0.0-0.5	.05	.55			
	38-48	---	---	---	---	1.40-42.00	---	---	---	---	---			
Groseclose------	0-10	5-19	42-70	27-40	1.25-1.55	4.00-14.00	0.14-0.15	3.0-5.9	0.5-2.5	.28	.28	4	4	86
	10-33	5-44	5-70	35-60	1.35-1.60	0.42-1.40	0.11-0.15	6.0-8.9	0.0-0.5	.28	.32			
	33-62	5-48	42-80	15-40	1.35-1.60	0.42-1.40	0.08-0.22	3.0-5.9	0.0-0.5	.24	.49			
4D:														
Berks-----------	0-6	5-48	51-80	10-27	1.20-1.50	4.00-42.00	0.12-0.17	0.0-2.9	0.5-2.0	.28	.43	2	5	48
	6-22	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.17	0.0-2.9	0.0-0.5	.20	.49			
	22-32	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.11	0.0-2.9	0.0-0.5	.17	.49			
	32-38	5-51	29-80	5-20	1.20-1.60	14.00-42.00	0.03-0.08	0.0-2.9	0.0-0.5	.05	.55			
	38-48	---	---	---	---	1.40-42.00	---	---	---	---	---			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
4D:														
Poplimento------	0-5	5-20	45-65	27-40	1.30-1.45	4.00-14.00	0.13-0.15	3.0-5.9	0.5-2.5	.32	.32	5	6	48
	5-20	2-30	20-60	35-60	1.30-1.60	1.40-4.00	0.10-0.15	6.0-8.9	0.0-0.5	.28	.28			
	20-35	2-30	20-60	35-60	1.30-1.60	1.40-4.00	0.04-0.15	6.0-8.9	0.0-0.5	.28	.28			
	35-60	2-20	45-65	27-50	1.25-1.50	1.40-4.00	0.04-0.14	3.0-5.9	0.0-0.5	.32	.43			
5C:														
Berks-----------	0-6	5-48	51-80	10-27	1.20-1.50	4.00-42.00	0.12-0.17	0.0-2.9	0.5-2.0	.28	.43	2	5	48
	6-22	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.17	0.0-2.9	0.0-0.5	.20	.49			
	22-32	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.11	0.0-2.9	0.0-0.5	.17	.49			
	32-38	5-51	29-80	5-20	1.20-1.60	14.00-42.00	0.03-0.08	0.0-2.9	0.0-0.5	.05	.55			
	38-48	---	---	---	---	1.40-42.00	---	---	---	---	---			
Weikert---------	0-2	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.11-0.17	0.0-2.9	0.5-2.0	.28	.43	1	6	38
	2-8	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.08-0.10	0.0-2.9	0.0-0.5	.20	.49			
	8-14	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.02-0.06	0.0-2.9	0.0-0.5	.05	.49			
	14-24	---	---	---	---	1.40-42.00	---	---	---	---	---			
5D:														
Berks-----------	0-6	5-48	51-80	10-27	1.20-1.50	4.00-42.00	0.12-0.17	0.0-2.9	0.5-2.0	.28	.43	2	5	48
	6-22	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.17	0.0-2.9	0.0-0.5	.20	.49			
	22-32	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.11	0.0-2.9	0.0-0.5	.17	.49			
	32-38	5-51	29-80	5-20	1.20-1.60	14.00-42.00	0.03-0.08	0.0-2.9	0.0-0.5	.05	.55			
	38-48	---	---	---	---	1.40-42.00	---	---	---	---	---			
Weikert---------	0-2	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.11-0.17	0.0-2.9	0.5-2.0	.28	.43	1	6	38
	2-8	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.08-0.10	0.0-2.9	0.0-0.5	.20	.49			
	8-14	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.02-0.06	0.0-2.9	0.0-0.5	.05	.49			
	14-24	---	---	---	---	1.40-42.00	---	---	---	---	---			
5E:														
Berks-----------	0-6	5-48	51-80	10-27	1.20-1.50	4.00-42.00	0.12-0.17	0.0-2.9	0.5-2.0	.28	.43	2	5	48
	6-22	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.17	0.0-2.9	0.0-0.5	.20	.49			
	22-32	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.11	0.0-2.9	0.0-0.5	.17	.49			
	32-38	5-51	29-80	5-20	1.20-1.60	14.00-42.00	0.03-0.08	0.0-2.9	0.0-0.5	.05	.55			
	38-48	---	---	---	---	1.40-42.00	---	---	---	---	---			
Weikert---------	0-2	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.11-0.17	0.0-2.9	0.5-2.0	.28	.43	1	6	38
	2-8	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.08-0.10	0.0-2.9	0.0-0.5	.20	.49			
	8-14	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.02-0.06	0.0-2.9	0.0-0.5	.05	.49			
	14-24	---	---	---	---	1.40-42.00	---	---	---	---	---			
5F:														
Berks-----------	0-6	5-48	51-80	10-27	1.20-1.50	4.00-42.00	0.12-0.17	0.0-2.9	0.5-2.0	.28	.43	2	5	48
	6-22	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.17	0.0-2.9	0.0-0.5	.20	.49			
	22-32	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.11	0.0-2.9	0.0-0.5	.17	.49			
	32-38	5-51	29-80	5-20	1.20-1.60	14.00-42.00	0.03-0.08	0.0-2.9	0.0-0.5	.05	.55			
	38-48	---	---	---	---	1.40-42.00	---	---	---	---	---			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
5F:														
Weikert---------	0-2	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.11-0.17	0.0-2.9	0.5-2.0	.28	.43	1	6	38
	2-8	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.08-0.10	0.0-2.9	0.0-0.5	.20	.49			
	8-14	5-48	51-80	15-27	1.20-1.40	14.00-42.00	0.02-0.06	0.0-2.9	0.0-0.5	.05	.49			
	14-24	---	---	---	---	1.40-42.00	---	---	---	---	---			
6E:														
Berks-----------	0-6	5-48	51-80	10-27	1.20-1.50	4.00-42.00	0.12-0.17	0.0-2.9	0.5-2.0	.28	.43	2	5	48
	6-22	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.17	0.0-2.9	0.0-0.5	.20	.49			
	22-32	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.11	0.0-2.9	0.0-0.5	.17	.49			
	32-38	5-51	29-80	5-20	1.20-1.60	14.00-42.00	0.03-0.08	0.0-2.9	0.0-0.5	.05	.55			
	38-48	---	---	---	---	1.40-42.00	---	---	---	---	---			
Westmoreland----	0-6	5-48	51-80	12-27	1.20-1.40	4.00-14.00	0.18-0.21	0.0-2.9	0.5-2.5	.37	.37	3	6	48
	6-36	5-48	42-80	18-35	1.20-1.50	4.00-14.00	0.09-0.21	0.0-2.9	0.0-0.5	.32	.43			
	36-54	5-48	42-80	12-40	1.20-1.50	4.00-14.00	0.01-0.09	0.0-2.9	0.0-0.5	.15	.43			
	54-64	---	---	---	---	1.40-42.00	---	---	---	---	---			
6F:														
Berks-----------	0-6	5-48	51-80	10-27	1.20-1.50	4.00-42.00	0.12-0.17	0.0-2.9	0.5-2.0	.28	.43	2	5	48
	6-22	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.17	0.0-2.9	0.0-0.5	.20	.49			
	22-32	5-51	29-80	10-32	1.20-1.60	4.00-42.00	0.04-0.11	0.0-2.9	0.0-0.5	.17	.49			
	32-38	5-51	29-80	5-20	1.20-1.60	14.00-42.00	0.03-0.08	0.0-2.9	0.0-0.5	.05	.55			
	38-48	---	---	---	---	1.40-42.00	---	---	---	---	---			
Westmoreland----	0-6	5-48	51-80	12-27	1.20-1.40	4.00-14.00	0.18-0.21	0.0-2.9	0.5-2.5	.37	.37	3	6	48
	6-36	5-48	42-80	18-35	1.20-1.50	4.00-14.00	0.09-0.21	0.0-2.9	0.0-0.5	.32	.43			
	36-54	5-48	42-80	12-40	1.20-1.50	4.00-14.00	0.01-0.09	0.0-2.9	0.0-0.5	.15	.43			
	54-64	---	---	---	---	1.40-42.00	---	---	---	---	---			
7E:														
Bland-----------	0-4	2-20	40-70	27-40	1.20-1.50	4.00-14.00	0.16-0.20	3.0-5.9	0.5-2.5	.43	.43	2	6	48
	4-30	2-25	15-55	45-60	1.30-1.60	1.40-4.00	0.10-0.15	3.0-5.9	0.0-0.5	.28	.28			
	30-36	2-30	15-70	20-50	1.30-1.60	1.40-4.00	0.06-0.15	3.0-5.9	0.0-0.5	.17	.37			
	36-46	---	---	---	---	0.00-4.00	---	---	---	---	---			
8D:														
Bland-----------	0-4	2-20	40-70	27-40	1.20-1.50	4.00-14.00	0.16-0.20	3.0-5.9	0.5-2.5	.43	.43	2	6	48
	4-30	2-25	15-55	45-60	1.30-1.60	1.40-4.00	0.10-0.15	3.0-5.9	0.0-0.5	.28	.28			
	30-36	2-30	15-70	20-50	1.30-1.60	1.40-4.00	0.06-0.15	3.0-5.9	0.0-0.5	.17	.37			
	36-46	---	---	---	---	0.00-4.00	---	---	---	---	---			
Rock outcrop.														

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
8E:														
Bland-----------	0-4	2-20	40-70	27-40	1.20-1.50	4.00-14.00	0.16-0.20	3.0-5.9	0.5-2.5	.43	.43	2	6	48
	4-30	2-25	15-55	45-60	1.30-1.60	1.40-4.00	0.10-0.15	3.0-5.9	0.0-0.5	.28	.28			
	30-36	2-30	15-70	20-50	1.30-1.60	1.40-4.00	0.06-0.15	3.0-5.9	0.0-0.5	.17	.37			
	36-46	---	---	---	---	0.00-4.00	---	---	---	---	---			
Rock outcrop.														
9D:														
Bland-----------	0-4	2-20	40-70	27-40	1.20-1.50	4.00-14.00	0.16-0.20	3.0-5.9	0.5-2.5	.43	.43	2	6	48
	4-30	2-25	15-55	45-60	1.30-1.60	1.40-4.00	0.10-0.15	3.0-5.9	0.0-0.5	.28	.28			
	30-36	2-30	15-70	20-50	1.30-1.60	1.40-4.00	0.06-0.15	3.0-5.9	0.0-0.5	.17	.37			
	36-46	---	---	---	---	0.00-4.00	---	---	---	---	---			
Rock outcrop.														
10D:														
Calvin----------	0-9	25-51	29-49	10-25	1.20-1.40	14.00-42.00	0.15-0.17	0.0-2.9	0.5-2.0	.24	.32	2	5	56
	9-25	5-51	29-80	10-25	1.40-1.60	14.00-42.00	0.08-0.15	0.0-2.9	0.0-0.5	.17	.43			
	25-30	5-51	29-80	10-25	1.40-1.60	14.00-42.00	0.04-0.12	0.0-2.9	0.0-0.5	.10	.43			
	30-40	---	---	---	---	1.40-42.00	---	---	---	---	---			
11F:														
Calvin----------	0-9	25-51	29-49	10-25	1.20-1.40	14.00-42.00	0.15-0.17	0.0-2.9	0.5-2.0	.24	.32	2	5	56
	9-25	5-51	29-80	10-25	1.40-1.60	14.00-42.00	0.08-0.15	0.0-2.9	0.0-0.5	.17	.43			
	25-30	5-51	29-80	10-25	1.40-1.60	14.00-42.00	0.04-0.12	0.0-2.9	0.0-0.5	.10	.43			
	30-40	---	---	---	---	1.40-42.00	---	---	---	---	---			
Rough-----------	0-2	25-51	29-49	12-27	1.20-1.40	14.00-141.00	0.10-0.14	0.0-2.9	0.5-2.0	.24	.37	1	6	38
	2-8	5-51	29-80	12-27	1.20-1.40	14.00-141.00	0.06-0.11	0.0-2.9	0.0-0.5	.17	.43			
	8-10	5-51	29-80	12-27	1.20-1.40	14.00-141.00	0.03-0.07	0.0-2.9	0.0-0.5	.10	.43			
	10-20	---	---	---	---	0.01-4.00	---	---	---	---	---			
12C:														
Carbo-----------	0-6	5-19	42-70	27-40	1.20-1.40	4.00-14.00	0.13-0.15	3.0-5.9	0.5-2.5	.32	.32	2	4	86
	6-29	5-44	5-39	60-80	1.30-1.45	0.42-1.40	0.09-0.12	6.0-8.9	0.0-0.5	.17	.17			
	29-39	---	---	---	---	0.00-4.00	---	---	---	---	---			
Beech Grove-----	0-4	5-48	51-80	10-27	1.20-1.50	4.00-14.00	0.11-0.17	0.0-2.9	0.5-2.5	.24	.43	1	4L	56
	4-14	---	---	---	---	0.00-4.00	---	---	---	---	---			
12D:														
Carbo-----------	0-6	5-19	42-70	27-40	1.20-1.40	4.00-14.00	0.13-0.15	3.0-5.9	0.5-2.5	.32	.32	2	4	86
	6-29	5-44	5-39	60-80	1.30-1.45	0.42-1.40	0.09-0.12	6.0-8.9	0.0-0.5	.17	.17			
	29-39	---	---	---	---	0.00-4.00	---	---	---	---	---			
Beech Grove-----	0-4	5-48	51-80	10-27	1.20-1.50	4.00-14.00	0.11-0.17	0.0-2.9	0.5-2.5	.24	.43	1	4L	56
	4-14	---	---	---	---	0.00-4.00	---	---	---	---	---			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Kf	T	Wind erodibility group	Wind erodibility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
12E:														
Carbo-----------	0-6	5-19	42-70	27-40	1.20-1.40	4.00-14.00	0.13-0.15	3.0-5.9	0.5-2.5	.32	.32	2	4	86
	6-29	5-44	5-39	60-80	1.30-1.45	0.42-1.40	0.09-0.12	6.0-8.9	0.0-0.5	.17	.17			
	29-39	---	---	---	---	0.00-4.00	---	---	---	---	---			
Beech Grove-----	0-4	5-48	51-80	10-27	1.20-1.50	4.00-14.00	0.11-0.17	0.0-2.9	0.5-2.5	.24	.43	1	4L	56
	4-14	---	---	---	---	0.00-4.00	---	---	---	---	---			
12F:														
Carbo-----------	0-6	5-19	42-70	27-40	1.20-1.40	4.00-14.00	0.13-0.15	3.0-5.9	0.5-2.5	.32	.32	2	4	86
	6-29	5-44	5-39	60-80	1.30-1.45	0.42-1.40	0.09-0.12	6.0-8.9	0.0-0.5	.17	.17			
	29-39	---	---	---	---	0.00-4.00	---	---	---	---	---			
Beech Grove-----	0-4	5-48	51-80	10-27	1.20-1.50	4.00-14.00	0.11-0.17	0.0-2.9	0.5-2.5	.24	.43	1	4L	56
	4-14	---	---	---	---	0.00-4.00	---	---	---	---	---			
13C:														
Carbo-----------	0-6	5-19	42-70	27-40	1.20-1.40	4.00-14.00	0.13-0.15	3.0-5.9	0.5-2.5	.32	.32	2	4	86
	6-29	5-44	5-39	60-80	1.30-1.45	0.42-1.40	0.09-0.12	6.0-8.9	0.0-0.5	.17	.17			
	29-39	---	---	---	---	0.00-4.00	---	---	---	---	---			
Frederick-------	0-2	5-48	51-80	15-27	1.25-1.50	14.00-42.00	0.18-0.22	0.0-2.9	0.5-2.5	.37	.37	5	6	48
	2-8	5-19	42-70	27-40	1.30-1.60	4.00-14.00	0.13-0.15	3.0-5.9	0.5-2.0	.37	.37			
	8-16	2-44	10-70	35-60	1.20-1.50	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.32	.32			
	16-62	2-44	10-58	40-75	1.20-1.40	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.20	.20			
Urban land.														
14D:														
Carbo-----------	0-6	5-19	42-70	27-40	1.20-1.40	4.00-14.00	0.13-0.15	3.0-5.9	0.5-2.5	.32	.32	2	4	86
	6-29	5-44	5-39	60-80	1.30-1.45	0.42-1.40	0.09-0.12	6.0-8.9	0.0-0.5	.17	.17			
	29-39	---	---	---	---	0.00-4.00	---	---	---	---	---			
Rock outcrop.														
14E:														
Carbo-----------	0-6	5-19	42-70	27-40	1.20-1.40	4.00-14.00	0.13-0.15	3.0-5.9	0.5-2.5	.32	.32	2	4	86
	6-29	5-44	5-39	60-80	1.30-1.45	0.42-1.40	0.09-0.12	6.0-8.9	0.0-0.5	.17	.17			
	29-39	---	---	---	---	0.00-4.00	---	---	---	---	---			
Rock outcrop.														
15D:														
Carbo-----------	0-6	5-19	42-70	27-40	1.20-1.40	4.00-14.00	0.13-0.15	3.0-5.9	0.5-2.5	.32	.32	2	4	86
	6-29	5-44	5-39	60-80	1.30-1.45	0.42-1.40	0.09-0.12	6.0-8.9	0.0-0.5	.17	.17			
	29-39	---	---	---	---	0.00-4.00	---	---	---	---	---			
Rock outcrop.														

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
16C:														
Cedarcreek------	0-3	25-50	30-50	15-27	1.35-1.65	4.00-42.00	0.07-0.11	0.0-2.9	0.0-0.5	.10	.28	5	6	0
	3-15	15-65	20-65	15-27	1.35-1.65	4.00-42.00	0.03-0.12	0.0-2.9	0.0-0.1	.10	.32			
	15-65	15-65	20-65	18-27	1.35-1.65	4.00-42.00	0.03-0.12	0.0-2.9	0.0-0.1	.05	.43			
Sewell----------	0-4	55-75	5-40	5-18	1.35-1.65	14.00-42.00	0.08-0.10	0.0-2.9	0.0-0.5	.10	.15	5	3	56
	4-9	35-75	5-50	5-18	1.35-1.65	14.00-42.00	0.03-0.11	0.0-2.9	0.0-0.1	.10	.20			
	9-65	35-75	5-50	5-18	1.35-1.65	14.00-42.00	0.03-0.11	0.0-2.9	0.0-0.1	.10	.17			
Rock outcrop.														
17A:														
Chagrin---------	0-6	25-51	29-49	10-25	1.20-1.40	4.00-14.00	0.15-0.19	0.0-2.9	1.0-4.0	.24	.24	5	6	48
	6-42	5-78	5-80	18-35	1.25-1.50	4.00-14.00	0.10-0.22	0.0-2.9	0.3-1.0	.17	.20			
	42-62	5-82	5-80	5-25	1.30-1.55	4.00-14.00	0.10-0.22	0.0-2.9	0.3-1.0	.24	.28			
18. Dumps, mine-Urban land														
19C:														
Frederick-------	0-2	5-48	51-80	15-27	1.25-1.50	14.00-42.00	0.18-0.22	0.0-2.9	0.5-2.5	.37	.37	5	6	48
	2-8	5-19	42-70	27-40	1.30-1.60	4.00-14.00	0.13-0.15	3.0-5.9	0.5-2.0	.37	.37			
	8-16	2-44	10-70	35-60	1.20-1.50	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.32	.32			
	16-62	2-44	10-58	40-75	1.20-1.40	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.20	.20			
19D:														
Frederick-------	0-2	5-48	51-80	15-27	1.25-1.50	14.00-42.00	0.18-0.22	0.0-2.9	0.5-2.5	.37	.37	5	6	48
	2-8	5-19	42-70	27-40	1.30-1.60	4.00-14.00	0.13-0.15	3.0-5.9	0.5-2.0	.37	.37			
	8-16	2-44	10-70	35-60	1.20-1.50	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.32	.32			
	16-62	2-44	10-58	40-75	1.20-1.40	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.20	.20			
19E:														
Frederick-------	0-2	5-48	51-80	15-27	1.25-1.50	14.00-42.00	0.18-0.22	0.0-2.9	0.5-2.5	.37	.37	5	6	48
	2-8	5-19	42-70	27-40	1.30-1.60	4.00-14.00	0.13-0.15	3.0-5.9	0.5-2.0	.37	.37			
	8-16	2-44	10-70	35-60	1.20-1.50	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.32	.32			
	16-62	2-44	10-58	40-75	1.20-1.40	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.20	.20			
19F:														
Frederick-------	0-2	5-48	51-80	15-27	1.25-1.50	14.00-42.00	0.18-0.22	0.0-2.9	0.5-2.5	.37	.37	5	6	48
	2-8	5-19	42-70	27-40	1.30-1.60	4.00-14.00	0.13-0.15	3.0-5.9	0.5-2.0	.37	.37			
	8-16	2-44	10-70	35-60	1.20-1.50	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.32	.32			
	16-62	2-44	10-58	40-75	1.20-1.40	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.20	.20			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
20C:														
Frederick-------	0-2	5-48	51-80	15-27	1.25-1.50	14.00-42.00	0.18-0.22	0.0-2.9	0.5-2.5	.37	.37	5	6	48
	2-8	5-19	42-70	27-40	1.30-1.60	4.00-14.00	0.13-0.15	3.0-5.9	0.5-2.0	.37	.37			
	8-16	2-44	10-70	35-60	1.20-1.50	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.32	.32			
	16-62	2-44	10-58	40-75	1.20-1.40	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.20	.20			
20D:														
Frederick-------	0-2	5-48	51-80	15-27	1.25-1.50	14.00-42.00	0.18-0.22	0.0-2.9	0.5-2.5	.37	.37	5	6	48
	2-8	5-19	42-70	27-40	1.30-1.60	4.00-14.00	0.13-0.15	3.0-5.9	0.5-2.0	.37	.37			
	8-16	2-44	10-70	35-60	1.20-1.50	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.32	.32			
	16-62	2-44	10-58	40-75	1.20-1.40	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.20	.20			
21C:														
Frederick-------	0-2	5-48	51-80	7-27	1.25-1.50	14.00-42.00	0.12-0.17	0.0-2.9	0.5-2.5	.24	.37	5	5	48
	2-6	5-19	42-70	27-40	1.30-1.60	4.00-14.00	0.08-0.11	3.0-5.9	0.5-2.0	.20	.32			
	6-13	2-44	10-70	35-60	1.20-1.50	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.24	.24			
	13-62	2-44	10-58	40-75	1.20-1.40	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.20	.20			
21D:														
Frederick-------	0-2	5-48	51-80	7-27	1.25-1.50	14.00-42.00	0.12-0.17	0.0-2.9	0.5-2.5	.24	.37	5	5	48
	2-6	5-19	42-70	27-40	1.30-1.60	4.00-14.00	0.08-0.11	3.0-5.9	0.5-2.0	.20	.32			
	6-13	2-44	10-70	35-60	1.20-1.50	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.24	.24			
	13-62	2-44	10-58	40-75	1.20-1.40	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.20	.20			
21E:														
Frederick-------	0-2	5-48	51-80	7-27	1.25-1.50	14.00-42.00	0.12-0.17	0.0-2.9	0.5-2.5	.24	.37	5	5	48
	2-6	5-19	42-70	27-40	1.30-1.60	4.00-14.00	0.08-0.11	3.0-5.9	0.5-2.0	.20	.32			
	6-13	2-44	10-70	35-60	1.20-1.50	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.24	.24			
	13-62	2-44	10-58	40-75	1.20-1.40	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.20	.20			
21F:														
Frederick-------	0-2	5-48	51-80	7-27	1.25-1.50	14.00-42.00	0.12-0.17	0.0-2.9	0.5-2.5	.24	.37	5	5	48
	2-6	5-19	42-70	27-40	1.30-1.60	4.00-14.00	0.08-0.11	3.0-5.9	0.5-2.0	.20	.32			
	6-13	2-44	10-70	35-60	1.20-1.50	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.24	.24			
	13-62	2-44	10-58	40-75	1.20-1.40	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.20	.20			
22C:														
Frederick-------	0-2	5-48	51-80	7-27	1.25-1.50	14.00-42.00	0.12-0.17	0.0-2.9	0.5-2.5	.24	.37	5	5	48
	2-6	5-19	42-70	27-40	1.30-1.60	4.00-14.00	0.08-0.11	3.0-5.9	0.5-2.0	.20	.32			
	6-13	2-44	10-70	35-60	1.20-1.50	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.24	.24			
	13-62	2-44	10-58	40-75	1.20-1.40	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.20	.20			
22D:														
Frederick-------	0-2	5-48	51-80	7-27	1.25-1.50	14.00-42.00	0.12-0.17	0.0-2.9	0.5-2.5	.24	.37	5	5	48
	2-6	5-19	42-70	27-40	1.30-1.60	4.00-14.00	0.08-0.11	3.0-5.9	0.5-2.0	.20	.32			
	6-13	2-44	10-70	35-60	1.20-1.50	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.24	.24			
	13-62	2-44	10-58	40-75	1.20-1.40	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.20	.20			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
23D:														
Gilpin----------	0-3	10-35	51-80	15-27	1.20-1.40	4.00-14.00	0.17-0.22	0.0-2.9	0.5-2.5	.32	.37	3	6	48
	3-7	10-50	29-80	15-27	1.20-1.40	4.00-14.00	0.14-0.20	0.0-2.9	0.0-1.0	.43	.49			
	7-31	10-50	29-80	18-35	1.20-1.50	4.00-14.00	0.09-0.20	0.0-2.9	0.0-0.5	.28	.37			
	31-41	---	---	---	---	1.40-42.00	---	---	---	---	---			
24D:														
Gilpin----------	0-3	5-45	50-80	2-25	1.20-1.40	4.00-14.00	0.11-0.20	0.0-2.9	0.5-4.0	.43	.43	3	2	134
	3-5	5-45	35-80	2-25	1.20-1.40	4.00-14.00	0.10-0.20	0.0-2.9	0.5-2.0	.43	.43			
	5-30	5-45	35-80	18-35	1.20-1.50	4.00-14.00	0.08-0.20	0.0-2.9	0.0-0.5	.28	.43			
	30-35	5-85	10-80	2-25	1.20-1.50	4.00-14.00	0.02-0.11	0.0-2.9	0.0-0.2	.15	.49			
	35-39	---	---	---	---	4.00-14.00	---	---	---	---	---			
	39-49	---	---	---	---	1.40-14.00	---	---	---	---	---			
Berks-----------	0-4	5-40	50-80	5-25	1.20-1.50	4.00-42.00	0.17-0.22	0.0-2.9	2.0-4.0	.37	.43	3	5	56
	4-8	5-45	35-80	5-30	1.20-1.60	4.00-42.00	0.05-0.17	0.0-2.9	0.0-0.5	.37	.55			
	8-23	5-45	35-80	5-30	1.20-1.60	4.00-42.00	0.05-0.11	0.0-2.9	0.0-0.5	.20	.55			
	23-34	10-50	35-75	5-20	1.20-1.60	14.00-42.00	0.04-0.11	0.0-2.9	0.0-0.5	.10	.64			
	34-36	---	---	---	---	1.40-14.00	---	---	---	---	---			
	36-46	---	---	---	---	0.42-1.40	---	---	---	---	---			
24F:														
Gilpin----------	0-3	5-45	50-80	2-25	1.20-1.40	4.00-14.00	0.11-0.20	0.0-2.9	0.5-4.0	.43	.43	3	2	134
	3-5	5-45	35-80	2-25	1.20-1.40	4.00-14.00	0.10-0.20	0.0-2.9	0.5-2.0	.43	.43			
	5-30	5-45	35-80	18-35	1.20-1.50	4.00-14.00	0.08-0.20	0.0-2.9	0.0-0.5	.28	.43			
	30-35	5-85	10-80	2-25	1.20-1.50	4.00-14.00	0.02-0.11	0.0-2.9	0.0-0.2	.15	.49			
	35-39	---	---	---	---	4.00-14.00	---	---	---	---	---			
	39-49	---	---	---	---	1.40-14.00	---	---	---	---	---			
Berks-----------	0-4	5-40	50-80	5-25	1.20-1.50	4.00-42.00	0.17-0.22	0.0-2.9	2.0-4.0	.37	.43	3	5	56
	4-8	5-45	35-80	5-30	1.20-1.60	4.00-42.00	0.05-0.17	0.0-2.9	0.0-0.5	.37	.55			
	8-23	5-45	35-80	5-30	1.20-1.60	4.00-42.00	0.05-0.11	0.0-2.9	0.0-0.5	.20	.55			
	23-34	10-50	35-75	5-20	1.20-1.60	14.00-42.00	0.04-0.11	0.0-2.9	0.0-0.5	.10	.64			
	34-36	---	---	---	---	1.40-14.00	---	---	---	---	---			
	36-46	---	---	---	---	0.42-1.40	---	---	---	---	---			
25E:														
Gilpin----------	0-3	10-35	51-80	15-27	1.20-1.40	4.00-14.00	0.17-0.22	0.0-2.9	0.5-2.5	.32	.37	3	6	48
	3-7	10-50	29-80	15-27	1.20-1.40	4.00-14.00	0.14-0.20	0.0-2.9	0.0-1.0	.43	.49			
	7-31	10-50	29-80	18-35	1.20-1.50	4.00-14.00	0.09-0.20	0.0-2.9	0.0-0.5	.28	.37			
	31-41	---	---	---	---	1.40-42.00	---	---	---	---	---			
Shelocta--------	0-3	5-45	51-80	10-25	1.15-1.30	4.00-14.00	0.17-0.20	0.0-2.9	0.5-3.0	.32	.37	5	5	56
	3-55	5-50	29-80	18-35	1.30-1.55	4.00-14.00	0.06-0.20	0.0-2.9	0.0-0.5	.28	.43			
	55-70	1-30	5-58	40-70	1.30-1.55	4.00-14.00	0.02-0.11	0.0-2.9	0.0-0.5	.05	.20			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
26F:														
Gilpin----------	0-3	10-35	51-80	15-27	1.20-1.40	4.00-14.00	0.17-0.22	0.0-2.9	0.5-2.5	.32	.37	3	6	48
	3-7	10-50	29-80	15-27	1.20-1.40	4.00-14.00	0.14-0.20	0.0-2.9	0.0-1.0	.43	.49			
	7-31	10-50	29-80	18-35	1.20-1.50	4.00-14.00	0.09-0.20	0.0-2.9	0.0-0.5	.28	.37			
	31-41	---	---	---	---	1.40-42.00	---	---	---	---	---			
Shelocta--------	0-3	5-45	51-80	10-25	1.15-1.30	4.00-14.00	0.17-0.20	0.0-2.9	0.5-3.0	.32	.37	5	5	56
	3-55	5-50	29-80	18-35	1.30-1.55	4.00-14.00	0.06-0.20	0.0-2.9	0.0-0.5	.28	.43			
	55-70	1-30	5-58	40-70	1.30-1.55	4.00-14.00	0.02-0.11	0.0-2.9	0.0-0.5	.05	.20			
27A:														
Grigsby---------	0-13	55-80	5-40	5-20	1.20-1.50	4.00-42.00	0.10-0.15	0.0-2.9	1.0-4.0	.20	.20	5	3	86
	13-49	25-80	5-70	2-18	1.20-1.50	4.00-42.00	0.10-0.22	0.0-2.9	0.3-1.0	.28	.28			
	49-65	40-95	5-50	1-10	1.20-1.50	4.00-42.00	0.05-0.19	0.0-2.9	0.3-1.0	.37	.37			
28C:														
Highsplint------	0-3	10-40	55-80	5-20	1.20-1.40	4.00-14.00	0.13-0.20	0.0-2.9	0.5-3.0	.24	.37	5	8	0
	3-59	10-40	35-80	5-30	1.30-1.50	14.00-42.00	0.06-0.17	0.0-2.9	0.0-1.0	.17	.49			
	59-82	10-70	10-80	5-25	1.30-1.60	14.00-42.00	0.04-0.13	0.0-2.9	0.0-0.5	.10	.43			
28D:														
Highsplint------	0-3	10-40	55-80	5-20	1.20-1.40	4.00-14.00	0.13-0.20	0.0-2.9	0.5-3.0	.24	.37	5	8	0
	3-59	10-40	35-80	5-30	1.30-1.50	14.00-42.00	0.06-0.17	0.0-2.9	0.0-1.0	.17	.49			
	59-82	10-70	10-80	5-25	1.30-1.60	14.00-42.00	0.04-0.13	0.0-2.9	0.0-0.5	.10	.43			
29F:														
Highsplint------	0-3	10-40	55-80	5-20	1.20-1.40	4.00-14.00	0.13-0.20	0.0-2.9	0.5-3.0	.24	.37	5	8	0
	3-59	10-40	35-80	5-30	1.30-1.50	14.00-42.00	0.06-0.17	0.0-2.9	0.0-1.0	.17	.49			
	59-82	10-70	10-80	5-25	1.30-1.60	14.00-42.00	0.04-0.13	0.0-2.9	0.0-0.5	.10	.43			
Shelocta--------	0-4	25-50	30-50	7-25	1.15-1.30	4.00-14.00	0.10-0.15	0.0-2.9	0.5-3.0	.17	.28	4	8	0
	4-13	10-50	30-75	7-35	1.15-1.30	4.00-14.00	0.08-0.20	0.0-2.9	0.0-0.5	.28	.37			
	13-50	10-50	30-70	18-35	1.30-1.55	4.00-14.00	0.08-0.20	0.0-2.9	0.0-0.5	.20	.37			
	50-86	10-50	30-70	7-35	1.30-1.60	4.00-14.00	0.05-0.17	0.0-2.9	0.0-0.5	.15	.37			
30A:														
Holly-----------	0-4	25-52	28-50	15-27	1.20-1.40	4.00-14.00	0.16-0.19	0.0-2.9	1.0-5.0	.24	.24	5	6	48
	4-34	15-50	28-65	18-35	1.20-1.50	1.40-14.00	0.11-0.22	0.0-2.9	0.2-1.0	.37	.37			
	34-62	15-95	5-65	5-40	1.20-1.40	4.00-42.00	0.03-0.22	0.0-2.9	0.2-1.0	.32	.37			
31D:														
Kaymine---------	0-4	10-40	50-75	7-20	1.35-1.65	4.00-42.00	0.07-0.11	0.0-2.9	0.0-0.5	.17	.43	5	5	38
	4-28	10-45	30-75	7-25	1.35-1.65	4.00-42.00	0.04-0.13	0.0-2.9	0.0-0.1	.10	.43			
	28-64	10-45	30-75	7-25	1.35-1.65	4.00-42.00	0.06-0.15	0.0-2.9	0.0-0.1	.10	.43			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
32E:														
Kaymine---------	0-4	10-40	50-75	7-20	1.35-1.65	4.00-42.00	0.07-0.11	0.0-2.9	0.0-0.5	.17	.43	5	5	38
	4-28	10-45	30-75	7-25	1.35-1.65	4.00-42.00	0.04-0.13	0.0-2.9	0.0-0.1	.10	.43			
	28-64	10-45	30-75	7-25	1.35-1.65	4.00-42.00	0.06-0.15	0.0-2.9	0.0-0.1	.10	.43			
Cedarcreek------	0-3	25-50	30-50	15-27	1.35-1.65	4.00-42.00	0.07-0.11	0.0-2.9	0.0-0.5	.10	.28	5	6	0
	3-15	15-65	20-65	15-27	1.35-1.65	4.00-42.00	0.03-0.12	0.0-2.9	0.0-0.1	.10	.32			
	15-65	15-65	20-65	18-27	1.35-1.65	4.00-42.00	0.03-0.12	0.0-2.9	0.0-0.1	.05	.43			
33F:														
Kaymine---------	0-4	10-40	50-75	7-20	1.35-1.65	4.00-42.00	0.07-0.11	0.0-2.9	0.0-0.5	.17	.43	5	5	38
	4-28	10-45	30-75	7-25	1.35-1.65	4.00-42.00	0.04-0.13	0.0-2.9	0.0-0.1	.10	.43			
	28-64	10-45	30-75	7-25	1.35-1.65	4.00-42.00	0.06-0.15	0.0-2.9	0.0-0.1	.10	.43			
Fiveblock-------	0-6	55-75	10-35	5-18	1.35-1.65	14.00-42.00	0.05-0.07	0.0-2.9	0.0-0.5	.10	.15	5	3	48
	6-25	55-85	5-35	5-18	1.35-1.65	14.00-42.00	0.02-0.08	0.0-2.9	0.0-0.1	.10	.17			
	25-65	55-85	5-35	5-18	1.35-1.65	14.00-42.00	0.00-0.08	0.0-2.9	0.0-0.1	.10	.17			
34C:														
Kaymine---------	0-4	10-40	50-75	7-20	1.35-1.65	4.00-42.00	0.07-0.11	0.0-2.9	0.0-0.5	.17	.43	5	5	38
	4-28	10-45	30-75	7-25	1.35-1.65	4.00-42.00	0.04-0.13	0.0-2.9	0.0-0.1	.10	.43			
	28-64	10-45	30-75	7-25	1.35-1.65	4.00-42.00	0.06-0.15	0.0-2.9	0.0-0.1	.10	.43			
Fiveblock-------	0-6	55-75	10-35	5-18	1.35-1.65	14.00-42.00	0.05-0.07	0.0-2.9	0.0-0.5	.10	.15	5	3	48
	6-25	55-85	5-35	5-18	1.35-1.65	14.00-42.00	0.02-0.08	0.0-2.9	0.0-0.1	.10	.17			
	25-65	55-85	5-35	5-18	1.35-1.65	14.00-42.00	0.00-0.08	0.0-2.9	0.0-0.1	.10	.17			
Cedarcreek------	0-3	25-50	30-50	15-27	1.35-1.65	4.00-42.00	0.07-0.11	0.0-2.9	0.0-0.5	.10	.28	5	6	0
	3-15	15-65	20-65	15-27	1.35-1.65	4.00-42.00	0.03-0.12	0.0-2.9	0.0-0.1	.10	.32			
	15-65	15-65	20-65	18-27	1.35-1.65	4.00-42.00	0.03-0.12	0.0-2.9	0.0-0.1	.05	.43			
35C:														
Lily------------	0-3	25-51	29-49	5-20	1.20-1.40	4.00-42.00	0.15-0.19	0.0-2.9	0.5-2.0	.32	.37	2	5	56
	3-7	25-82	5-49	5-20	1.25-1.35	14.00-42.00	0.10-0.19	0.0-2.9	0.0-1.0	.37	.43			
	7-24	21-78	5-49	18-35	1.25-1.55	14.00-42.00	0.11-0.19	0.0-2.9	0.0-0.5	.37	.43			
	24-28	25-82	5-49	15-35	1.25-1.55	14.00-42.00	0.09-0.19	0.0-2.9	0.0-0.5	.20	.32			
	28-38	---	---	---	---	0.00-4.00	---	---	---	---	---			
35D:														
Lily------------	0-3	25-51	29-49	5-20	1.20-1.40	4.00-42.00	0.15-0.19	0.0-2.9	0.5-2.0	.32	.37	2	5	56
	3-7	25-82	5-49	5-20	1.25-1.35	14.00-42.00	0.10-0.19	0.0-2.9	0.0-1.0	.37	.43			
	7-24	21-78	5-49	18-35	1.25-1.55	14.00-42.00	0.11-0.19	0.0-2.9	0.0-0.5	.37	.43			
	24-28	25-82	5-49	15-35	1.25-1.55	14.00-42.00	0.09-0.19	0.0-2.9	0.0-0.5	.20	.32			
	28-38	---	---	---	---	0.00-4.00	---	---	---	---	---			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
35E:														
Lily------------	0-3	25-51	29-49	5-20	1.20-1.40	4.00-42.00	0.15-0.19	0.0-2.9	0.5-2.0	.32	.37	2	5	56
	3-7	25-82	5-49	5-20	1.25-1.35	14.00-42.00	0.10-0.19	0.0-2.9	0.0-1.0	.37	.43			
	7-24	21-78	5-49	18-35	1.25-1.55	14.00-42.00	0.11-0.19	0.0-2.9	0.0-0.5	.37	.43			
	24-28	25-82	5-49	15-35	1.25-1.55	14.00-42.00	0.09-0.19	0.0-2.9	0.0-0.5	.20	.32			
	28-38	---	---	---	---	0.00-4.00	---	---	---	---	---			
36A:														
Lobdell---------	0-8	5-48	51-80	15-27	1.20-1.40	4.00-14.00	0.20-0.22	0.0-2.9	1.0-4.0	.32	.32	5	6	48
	8-48	5-51	29-80	18-27	1.20-1.40	4.00-14.00	0.14-0.22	0.0-2.9	0.2-1.0	.37	.37			
	48-62	5-51	29-80	18-27	1.20-1.40	4.00-42.00	0.14-0.22	0.0-2.9	0.2-1.0	.37	.37			
Orrville--------	0-6	25-51	29-49	15-27	1.20-1.40	4.00-14.00	0.17-0.19	0.0-2.9	1.0-4.0	.24	.24	5	6	48
	6-34	5-51	29-80	18-27	1.20-1.45	4.00-14.00	0.14-0.22	0.0-2.9	0.2-1.0	.37	.37			
	34-62	5-82	5-70	18-30	1.30-1.50	4.00-42.00	0.09-0.22	0.0-2.9	0.2-1.0	.15	.20			
37D:														
Mandy-----------	0-4	10-40	50-80	7-25	1.20-1.50	4.00-14.00	0.17-0.19	0.0-2.9	0.5-3.0	.28	.43	3	5	48
	4-6	10-50	30-80	7-25	1.20-1.60	4.00-14.00	0.13-0.18	0.0-2.9	0.0-1.0	.37	.55			
	6-10	10-50	30-80	10-27	1.20-1.60	4.00-14.00	0.08-0.14	0.0-2.9	0.0-0.5	.32	.55			
	10-29	10-50	30-80	10-27	1.20-1.60	4.00-14.00	0.08-0.14	0.0-2.9	0.0-0.5	.20	.55			
	29-37	10-50	30-80	10-27	1.20-1.60	4.00-14.00	0.02-0.06	0.0-2.9	0.0-0.5	.10	.55			
	37-47	---	---	---	---	0.01-4.00	---	---	---	---	---			
Paddyknob-------	0-3	35-50	30-50	10-20	1.20-1.50	42.00-141.00	0.08-0.11	0.0-2.9	0.5-3.0	.17	.37	2	5	38
	3-6	35-75	10-45	8-22	1.20-1.50	42.00-141.00	0.05-0.13	0.0-2.9	0.0-1.0	.20	.49			
	6-26	35-75	10-40	8-22	1.20-1.50	42.00-141.00	0.05-0.14	0.0-2.9	0.0-0.5	.10	.32			
	26-36	---	---	---	---	0.00-4.00	---	---	---	---	---			
Rock outcrop.														
38D:														
Marrowbone------	0-5	55-75	10-40	4-18	1.20-1.60	14.00-42.00	0.12-0.16	0.0-2.9	0.5-5.0	.24	.28	2	3	86
	5-22	55-75	10-40	2-18	1.20-1.70	14.00-42.00	0.07-0.14	0.0-2.9	0.1-2.0	.17	.28			
	22-33	55-85	2-40	2-15	1.30-1.70	14.00-42.00	0.04-0.14	0.0-2.9	0.0-0.2	.10	.28			
	33-45	---	---	---	---	1.40-14.00	---	---	---	---	---			
	45-55	---	---	---	---	0.00-1.40	---	---	---	---	---			
38E:														
Marrowbone------	0-5	55-75	10-40	4-18	1.20-1.60	14.00-42.00	0.12-0.16	0.0-2.9	0.5-5.0	.24	.28	2	3	86
	5-22	55-75	10-40	2-18	1.20-1.70	14.00-42.00	0.07-0.14	0.0-2.9	0.1-2.0	.17	.28			
	22-33	55-85	2-40	2-15	1.30-1.70	14.00-42.00	0.04-0.14	0.0-2.9	0.0-0.2	.10	.28			
	33-45	---	---	---	---	1.40-14.00	---	---	---	---	---			
	45-55	---	---	---	---	0.00-1.40	---	---	---	---	---			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
38F:														
Marrowbone------	0-5	55-75	10-40	4-18	1.20-1.60	14.00-42.00	0.12-0.16	0.0-2.9	0.5-5.0	.24	.28	2	3	86
	5-22	55-75	10-40	2-18	1.20-1.70	14.00-42.00	0.07-0.14	0.0-2.9	0.1-2.0	.17	.28			
	22-33	55-85	2-40	2-15	1.30-1.70	14.00-42.00	0.04-0.14	0.0-2.9	0.0-0.2	.10	.28			
	33-45	---	---	---	---	1.40-14.00	---	---	---	---	---			
	45-55	---	---	---	---	0.00-1.40	---	---	---	---	---			
39D:														
Marrowbone------	0-5	55-75	10-40	4-18	1.20-1.60	14.00-42.00	0.12-0.16	0.0-2.9	0.5-5.0	.24	.28	2	3	86
	5-22	55-75	10-40	2-18	1.20-1.70	14.00-42.00	0.07-0.14	0.0-2.9	0.1-2.0	.17	.28			
	22-33	55-85	2-40	2-15	1.30-1.70	14.00-42.00	0.04-0.14	0.0-2.9	0.0-0.2	.10	.28			
	33-45	---	---	---	---	1.40-14.00	---	---	---	---	---			
	45-55	---	---	---	---	0.00-1.40	---	---	---	---	---			
Gilpin----------	0-3	5-45	50-80	2-25	1.20-1.40	4.00-14.00	0.11-0.20	0.0-2.9	0.5-4.0	.43	.43	3	2	134
	3-5	5-45	35-80	2-25	1.20-1.40	4.00-14.00	0.10-0.20	0.0-2.9	0.5-2.0	.43	.43			
	5-30	5-45	35-80	18-35	1.20-1.50	4.00-14.00	0.08-0.20	0.0-2.9	0.0-0.5	.28	.43			
	30-35	5-85	10-80	2-25	1.20-1.50	4.00-14.00	0.02-0.11	0.0-2.9	0.0-0.2	.15	.49			
	35-39	---	---	---	---	4.00-14.00	---	---	---	---	---			
	39-49	---	---	---	---	1.40-14.00	---	---	---	---	---			
39E:														
Marrowbone------	0-5	55-75	10-40	4-18	1.20-1.60	14.00-42.00	0.12-0.16	0.0-2.9	0.5-5.0	.24	.28	2	3	86
	5-22	55-75	10-40	2-18	1.20-1.70	14.00-42.00	0.07-0.14	0.0-2.9	0.1-2.0	.17	.28			
	22-33	55-85	2-40	2-15	1.30-1.70	14.00-42.00	0.04-0.14	0.0-2.9	0.0-0.2	.10	.28			
	33-45	---	---	---	---	1.40-14.00	---	---	---	---	---			
	45-55	---	---	---	---	0.00-1.40	---	---	---	---	---			
Gilpin----------	0-3	5-45	50-80	2-25	1.20-1.40	4.00-14.00	0.11-0.20	0.0-2.9	0.5-4.0	.43	.43	3	2	134
	3-5	5-45	35-80	2-25	1.20-1.40	4.00-14.00	0.10-0.20	0.0-2.9	0.5-2.0	.43	.43			
	5-30	5-45	35-80	18-35	1.20-1.50	4.00-14.00	0.08-0.20	0.0-2.9	0.0-0.5	.28	.43			
	30-35	5-85	10-80	2-25	1.20-1.50	4.00-14.00	0.02-0.11	0.0-2.9	0.0-0.2	.15	.49			
	35-39	---	---	---	---	4.00-14.00	---	---	---	---	---			
	39-49	---	---	---	---	1.40-14.00	---	---	---	---	---			
39F:														
Marrowbone------	0-5	55-75	10-40	4-18	1.20-1.60	14.00-42.00	0.12-0.16	0.0-2.9	0.5-5.0	.24	.28	2	3	86
	5-22	55-75	10-40	2-18	1.20-1.70	14.00-42.00	0.07-0.14	0.0-2.9	0.1-2.0	.17	.28			
	22-33	55-85	2-40	2-15	1.30-1.70	14.00-42.00	0.04-0.14	0.0-2.9	0.0-0.2	.10	.28			
	33-45	---	---	---	---	1.40-14.00	---	---	---	---	---			
	45-55	---	---	---	---	0.00-1.40	---	---	---	---	---			
Gilpin----------	0-3	5-45	50-80	2-25	1.20-1.40	4.00-14.00	0.11-0.20	0.0-2.9	0.5-4.0	.43	.43	3	2	134
	3-5	5-45	35-80	2-25	1.20-1.40	4.00-14.00	0.10-0.20	0.0-2.9	0.5-2.0	.43	.43			
	5-30	5-45	35-80	18-35	1.20-1.50	4.00-14.00	0.08-0.20	0.0-2.9	0.0-0.5	.28	.43			
	30-35	5-85	10-80	2-25	1.20-1.50	4.00-14.00	0.02-0.11	0.0-2.9	0.0-0.2	.15	.49			
	35-39	---	---	---	---	4.00-14.00	---	---	---	---	---			
	39-49	---	---	---	---	1.40-14.00	---	---	---	---	---			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
40F:														
Matewan---------	0-4	55-70	15-40	3-20	1.20-1.50	42.40-141.00	0.12-0.15	0.0-2.9	0.5-2.0	.28	.43	2	6	48
	4-21	45-80	10-55	5-18	1.20-1.50	14.10-141.00	0.07-0.13	0.0-2.9	0.0-0.5	.15	.43			
	21-38	45-85	5-55	3-15	1.20-1.50	42.40-141.00	0.02-0.10	0.0-2.9	0.0-0.5	.17	.49			
	38-48	---	---	---	---	0.00-1.40	---	---	---	---	---			
Rock outcrop.														
41A:														
Ogles-----------	0-6	25-51	29-49	7-18	1.10-1.40	14.00-42.00	0.13-0.19	0.0-2.9	1.0-4.0	.10	.28	5	5	38
	6-10	25-51	29-49	7-18	1.10-1.40	14.00-42.00	0.07-0.19	0.0-2.9	0.5-2.0	.10	.32			
	10-23	25-82	5-49	5-18	1.10-1.40	14.00-42.00	0.04-0.19	0.0-2.9	0.5-2.0	.05	.24			
	23-65	50-87	5-49	5-18	1.10-1.40	14.00-42.00	0.05-0.13	0.0-2.9	0.2-1.0	.02	.20			
42C:														
Oriskany--------	0-6	52-80	5-50	5-20	1.20-1.40	14.00-42.00	0.06-0.09	0.0-2.9	0.5-3.0	.10	.20	5	3	56
	6-17	30-80	5-50	7-27	1.20-1.40	14.00-42.00	0.05-0.11	0.0-2.9	0.0-0.5	.10	.24			
	17-70	20-65	5-50	15-35	1.30-1.65	14.00-42.00	0.04-0.11	0.0-2.9	0.0-0.5	.10	.32			
42D:														
Oriskany--------	0-6	52-80	5-50	5-20	1.20-1.40	14.00-42.00	0.06-0.09	0.0-2.9	0.5-3.0	.10	.20	5	3	56
	6-17	30-80	5-50	7-27	1.20-1.40	14.00-42.00	0.05-0.11	0.0-2.9	0.0-0.5	.10	.24			
	17-70	20-65	5-50	15-35	1.30-1.65	14.00-42.00	0.04-0.11	0.0-2.9	0.0-0.5	.10	.32			
42E:														
Oriskany--------	0-6	52-80	5-50	5-20	1.20-1.40	14.00-42.00	0.06-0.09	0.0-2.9	0.5-3.0	.10	.20	5	3	56
	6-17	30-80	5-50	7-27	1.20-1.40	14.00-42.00	0.05-0.11	0.0-2.9	0.0-0.5	.10	.24			
	17-70	20-65	5-50	15-35	1.30-1.65	14.00-42.00	0.04-0.11	0.0-2.9	0.0-0.5	.10	.32			
43.														
Pits, quarry														
44C:														
Poplimento------	0-5	5-20	45-65	27-40	1.30-1.45	4.00-14.00	0.13-0.15	3.0-5.9	0.5-2.5	.32	.32	5	6	48
	5-20	2-30	20-60	35-60	1.30-1.60	1.40-4.00	0.10-0.15	6.0-8.9	0.0-0.5	.28	.28			
	20-35	2-30	20-60	35-60	1.30-1.60	1.40-4.00	0.04-0.15	6.0-8.9	0.0-0.5	.28	.28			
	35-60	2-20	45-65	27-50	1.25-1.50	1.40-4.00	0.04-0.14	3.0-5.9	0.0-0.5	.32	.43			
Westmoreland----	0-6	5-48	51-80	12-27	1.20-1.40	4.00-14.00	0.18-0.21	0.0-2.9	0.5-2.5	.37	.37	3	6	48
	6-36	5-48	42-80	18-35	1.20-1.50	4.00-14.00	0.09-0.21	0.0-2.9	0.0-0.5	.32	.43			
	36-54	5-48	42-80	12-40	1.20-1.50	4.00-14.00	0.01-0.09	0.0-2.9	0.0-0.5	.15	.43			
	54-64	---	---	---	---	1.40-42.00	---	---	---	---	---			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
45F:														
Ramsey----------	0-5	50-82	5-49	5-15	1.25-1.50	42.00-141.00	0.10-0.13	0.0-2.9	0.5-2.0	.28	.28	1	3	86
	5-17	25-82	5-49	5-18	1.20-1.40	42.00-141.00	0.07-0.17	0.0-2.9	0.0-0.5	.32	.37			
	17-27	---	---	---	---	0.00-4.00	---	---	---	---	---			
Rock outcrop.														
46F:														
Rock outcrop.														
Beech Grove-----	0-4	5-48	51-80	10-27	1.20-1.50	4.00-14.00	0.11-0.17	0.0-2.9	0.5-2.5	.24	.43	1	4L	56
	4-14	---	---	---	---	0.00-4.00	---	---	---	---	---			
Benthole--------	0-3	5-35	51-80	10-27	1.20-1.40	4.00-14.00	0.13-0.18	0.0-2.9	0.5-3.0	.24	.37	5	5	48
	3-37	5-51	29-70	18-35	1.20-1.40	4.00-14.00	0.05-0.13	0.0-2.9	0.0-0.5	.15	.43			
	37-63	5-51	29-70	18-35	1.20-1.40	4.00-14.00	0.05-0.13	0.0-2.9	0.0-0.5	.10	.43			
47F:														
Sewell----------	0-4	55-75	5-40	5-18	1.35-1.65	14.00-42.00	0.08-0.10	0.0-2.9	0.0-0.5	.10	.15	5	3	56
	4-9	35-75	5-50	5-18	1.35-1.65	14.00-42.00	0.03-0.11	0.0-2.9	0.0-0.1	.10	.20			
	9-65	35-75	5-50	5-18	1.35-1.65	14.00-42.00	0.03-0.11	0.0-2.9	0.0-0.1	.10	.17			
Kaymine---------	0-4	10-40	50-75	7-20	1.35-1.65	4.00-42.00	0.07-0.11	0.0-2.9	0.0-0.5	.17	.43	5	5	38
	4-28	10-45	30-75	7-25	1.35-1.65	4.00-42.00	0.04-0.13	0.0-2.9	0.0-0.1	.10	.43			
	28-64	10-45	30-75	7-25	1.35-1.65	4.00-42.00	0.06-0.15	0.0-2.9	0.0-0.1	.10	.43			
Rock outcrop.														
48E:														
Shelocta--------	0-4	25-50	30-50	7-25	1.15-1.30	4.00-14.00	0.10-0.15	0.0-2.9	0.5-3.0	.17	.28	4	8	0
	4-13	10-50	30-75	7-35	1.15-1.30	4.00-14.00	0.08-0.20	0.0-2.9	0.0-0.5	.28	.37			
	13-50	10-50	30-70	18-35	1.30-1.55	4.00-14.00	0.08-0.20	0.0-2.9	0.0-0.5	.20	.37			
	50-86	10-50	30-70	7-35	1.30-1.60	4.00-14.00	0.05-0.17	0.0-2.9	0.0-0.5	.15	.37			
Cedarcreek------	0-3	25-50	30-50	15-27	1.35-1.65	4.00-42.00	0.07-0.11	0.0-2.9	0.0-0.5	.10	.28	5	6	0
	3-15	15-65	20-65	15-27	1.35-1.65	4.00-42.00	0.03-0.12	0.0-2.9	0.0-0.1	.10	.32			
	15-65	15-65	20-65	18-27	1.35-1.65	4.00-42.00	0.03-0.12	0.0-2.9	0.0-0.1	.05	.43			
49E:														
Shelocta--------	0-4	25-50	30-50	7-25	1.15-1.30	4.00-14.00	0.10-0.15	0.0-2.9	0.5-3.0	.17	.28	4	8	0
	4-13	10-50	30-75	7-35	1.15-1.30	4.00-14.00	0.08-0.20	0.0-2.9	0.0-0.5	.28	.37			
	13-50	10-50	30-70	18-35	1.30-1.55	4.00-14.00	0.08-0.20	0.0-2.9	0.0-0.5	.20	.37			
	50-86	10-50	30-70	7-35	1.30-1.60	4.00-14.00	0.05-0.17	0.0-2.9	0.0-0.5	.15	.37			
Highsplint------	0-3	10-40	55-80	5-20	1.20-1.40	4.00-14.00	0.13-0.20	0.0-2.9	0.5-3.0	.24	.37	5	8	0
	3-59	10-40	35-80	5-30	1.30-1.50	14.00-42.00	0.06-0.17	0.0-2.9	0.0-1.0	.17	.49			
	59-82	10-70	10-80	5-25	1.30-1.60	14.00-42.00	0.04-0.13	0.0-2.9	0.0-0.5	.10	.43			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
50F:														
Shelocta--------	0-4	25-50	30-50	7-25	1.15-1.30	4.00-14.00	0.10-0.15	0.0-2.9	0.5-3.0	.17	.28	4	8	0
	4-13	10-50	30-75	7-35	1.15-1.30	4.00-14.00	0.08-0.20	0.0-2.9	0.0-0.5	.28	.37			
	13-50	10-50	30-70	18-35	1.30-1.55	4.00-14.00	0.08-0.20	0.0-2.9	0.0-0.5	.20	.37			
	50-86	10-50	30-70	7-35	1.30-1.60	4.00-14.00	0.05-0.17	0.0-2.9	0.0-0.5	.15	.37			
Kaymine---------	0-4	10-40	50-75	7-20	1.35-1.65	4.00-42.00	0.07-0.11	0.0-2.9	0.0-0.5	.17	.43	5	5	38
	4-28	10-45	30-75	7-25	1.35-1.65	4.00-42.00	0.04-0.13	0.0-2.9	0.0-0.1	.10	.43			
	28-64	10-45	30-75	7-25	1.35-1.65	4.00-42.00	0.06-0.15	0.0-2.9	0.0-0.1	.10	.43			
51F:														
Stonecoal-------	0-31	60-85	5-35	4-10	1.00-1.30	14.00-141.00	0.02-0.09	0.0-2.0	0.0-0.5	.10	.24	5	8	0
	31-39	60-85	5-35	4-15	1.00-1.30	14.00-141.00	0.02-0.09	0.0-2.0	0.0-0.5	.10	.28			
	39-68	60-85	5-35	4-10	1.00-1.30	14.00-141.00	0.02-0.09	0.0-2.0	0.0-0.5	.10	.17			
52C:														
Tumbling--------	0-6	25-51	29-49	10-27	1.20-1.40	4.00-14.00	0.17-0.19	0.0-2.9	0.5-2.0	.28	.28	5	5	56
	6-19	12-44	15-70	25-40	1.20-1.45	4.00-14.00	0.11-0.15	0.0-2.9	0.0-1.0	.28	.28			
	19-47	12-44	15-70	35-50	1.20-1.40	4.00-14.00	0.11-0.15	0.0-2.9	0.0-0.5	.20	.24			
	47-65	12-44	15-70	35-50	1.20-1.40	4.00-14.00	0.11-0.15	0.0-2.9	0.0-0.5	.20	.24			
52D:														
Tumbling--------	0-6	25-51	29-49	10-27	1.20-1.40	4.00-14.00	0.17-0.19	0.0-2.9	0.5-2.0	.28	.28	5	5	56
	6-19	12-44	15-70	25-40	1.20-1.45	4.00-14.00	0.11-0.15	0.0-2.9	0.0-1.0	.28	.28			
	19-47	12-44	15-70	35-50	1.20-1.40	4.00-14.00	0.11-0.15	0.0-2.9	0.0-0.5	.20	.24			
	47-65	12-44	15-70	35-50	1.20-1.40	4.00-14.00	0.11-0.15	0.0-2.9	0.0-0.5	.20	.24			
53E:														
Tumbling--------	0-6	25-51	29-49	10-27	1.20-1.40	4.00-14.00	0.17-0.19	0.0-2.9	0.5-2.0	.28	.28	5	5	56
	6-19	12-44	15-70	25-40	1.20-1.45	4.00-14.00	0.11-0.15	0.0-2.9	0.0-1.0	.28	.28			
	19-47	12-44	15-70	35-50	1.20-1.40	4.00-14.00	0.11-0.15	0.0-2.9	0.0-0.5	.20	.24			
	47-65	12-44	15-70	35-50	1.20-1.40	4.00-14.00	0.11-0.15	0.0-2.9	0.0-0.5	.20	.24			
54F.														
Udorthents-Urban land														
55D:														
Wallen----------	0-4	60-80	5-35	8-20	1.40-1.55	14.00-42.00	0.08-0.12	0.0-2.9	0.5-2.0	.15	.24	2	4	86
	4-24	40-80	5-45	8-20	1.40-1.55	14.00-42.00	0.05-0.10	0.0-2.9	0.0-0.5	.10	.32			
	24-34	---	---	---	---	0.00-4.00	---	---	---	---	---			
55F:														
Wallen----------	0-4	60-80	5-35	8-20	1.40-1.55	14.00-42.00	0.08-0.12	0.0-2.9	0.5-2.0	.15	.24	2	4	86
	4-24	40-80	5-45	8-20	1.40-1.55	14.00-42.00	0.05-0.10	0.0-2.9	0.0-0.5	.10	.32			
	24-34	---	---	---	---	0.00-4.00	---	---	---	---	---			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
56D:														
Wallen----------	0-4	60-80	5-35	8-20	1.40-1.55	14.00-42.00	0.08-0.12	0.0-2.9	0.5-2.0	.15	.24	2	4	86
	4-24	40-80	5-45	8-20	1.40-1.55	14.00-42.00	0.05-0.10	0.0-2.9	0.0-0.5	.10	.32			
	24-34	---	---	---	---	0.00-4.00	---	---	---	---	---			
Rock outcrop.														
56F:														
Wallen----------	0-4	60-80	5-35	8-20	1.40-1.55	14.00-42.00	0.08-0.12	0.0-2.9	0.5-2.0	.15	.24	2	4	86
	4-24	40-80	5-45	8-20	1.40-1.55	14.00-42.00	0.05-0.10	0.0-2.9	0.0-0.5	.10	.32			
	24-34	---	---	---	---	0.00-4.00	---	---	---	---	---			
Rock outcrop.														
57C:														
Watahala--------	0-4	2-48	51-80	10-27	1.25-1.45	14.00-42.00	0.11-0.13	0.0-2.9	0.5-2.5	.17	.37	4	5	48
	4-28	2-51	29-80	10-27	1.20-1.50	14.00-42.00	0.10-0.18	0.0-2.9	0.0-0.5	.15	.37			
	28-42	2-51	18-80	18-35	1.20-1.50	4.00-14.00	0.06-0.18	0.0-2.9	0.0-0.5	.20	.37			
	42-60	2-44	2-58	43-70	1.20-1.40	1.40-14.00	0.06-0.14	3.0-5.9	0.0-0.5	.24	.24			
57D:														
Watahala--------	0-4	2-48	51-80	10-27	1.25-1.45	14.00-42.00	0.11-0.13	0.0-2.9	0.5-2.5	.17	.37	4	5	48
	4-28	2-51	29-80	10-27	1.20-1.50	14.00-42.00	0.10-0.18	0.0-2.9	0.0-0.5	.15	.37			
	28-42	2-51	18-80	18-35	1.20-1.50	4.00-14.00	0.06-0.18	0.0-2.9	0.0-0.5	.20	.37			
	42-60	2-44	2-58	43-70	1.20-1.40	1.40-14.00	0.06-0.14	3.0-5.9	0.0-0.5	.24	.24			
57E:														
Watahala--------	0-4	2-48	51-80	10-27	1.25-1.45	14.00-42.00	0.11-0.13	0.0-2.9	0.5-2.5	.17	.37	4	5	48
	4-28	2-51	29-80	10-27	1.20-1.50	14.00-42.00	0.10-0.18	0.0-2.9	0.0-0.5	.15	.37			
	28-42	2-51	18-80	18-35	1.20-1.50	4.00-14.00	0.06-0.18	0.0-2.9	0.0-0.5	.20	.37			
	42-60	2-44	2-58	43-70	1.20-1.40	1.40-14.00	0.06-0.14	3.0-5.9	0.0-0.5	.24	.24			
57F:														
Watahala--------	0-4	2-48	51-80	10-27	1.25-1.45	14.00-42.00	0.11-0.13	0.0-2.9	0.5-2.5	.17	.37	4	5	48
	4-28	2-51	29-80	10-27	1.20-1.50	14.00-42.00	0.10-0.18	0.0-2.9	0.0-0.5	.15	.37			
	28-42	2-51	18-80	18-35	1.20-1.50	4.00-14.00	0.06-0.18	0.0-2.9	0.0-0.5	.20	.37			
	42-60	2-44	2-58	43-70	1.20-1.40	1.40-14.00	0.06-0.14	3.0-5.9	0.0-0.5	.24	.24			
58D:														
Watahala--------	0-4	2-48	51-80	10-27	1.25-1.45	14.00-42.00	0.11-0.13	0.0-2.9	0.5-2.5	.17	.37	4	5	48
	4-28	2-51	29-80	10-27	1.20-1.50	14.00-42.00	0.10-0.18	0.0-2.9	0.0-0.5	.15	.37			
	28-42	2-51	18-80	18-35	1.20-1.50	4.00-14.00	0.06-0.18	0.0-2.9	0.0-0.5	.20	.37			
	42-60	2-44	2-58	43-70	1.20-1.40	1.40-14.00	0.06-0.14	3.0-5.9	0.0-0.5	.24	.24			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
58E:														
Watahala--------	0-4	2-48	51-80	10-27	1.25-1.45	14.00-42.00	0.11-0.13	0.0-2.9	0.5-2.5	.17	.37	4	5	48
	4-28	2-51	29-80	10-27	1.20-1.50	14.00-42.00	0.10-0.18	0.0-2.9	0.0-0.5	.15	.37			
	28-42	2-51	18-80	18-35	1.20-1.50	4.00-14.00	0.06-0.18	0.0-2.9	0.0-0.5	.20	.37			
	42-60	2-44	2-58	43-70	1.20-1.40	1.40-14.00	0.06-0.14	3.0-5.9	0.0-0.5	.24	.24			
59D:														
Wharton---------	0-2	5-35	50-80	10-25	1.20-1.40	0.42-4.00	0.19-0.22	0.0-2.9	1.0-4.0	.43	.43	3	5	56
	2-9	5-40	40-80	10-30	1.20-1.40	0.42-4.00	0.13-0.22	0.0-2.9	0.5-2.0	.49	.49			
	9-35	5-40	40-80	18-35	1.20-1.50	0.42-4.00	0.13-0.22	0.0-2.9	0.2-1.0	.43	.43			
	35-55	5-40	40-80	12-27	1.20-1.50	0.42-4.00	0.11-0.20	0.0-2.9	0.1-0.5	.37	.49			
	55-65	5-65	25-80	5-30	1.20-1.50	0.42-4.00	0.05-0.20	0.0-2.9	0.0-0.2	.43	.55			
	65-75	---	---	---	---	0.42-1.40	---	---	---	---	---			
Gilpin----------	0-3	5-45	50-80	2-25	1.20-1.40	4.00-14.00	0.11-0.20	0.0-2.9	0.5-4.0	.43	.43	3	2	134
	3-5	5-45	35-80	2-25	1.20-1.40	4.00-14.00	0.10-0.20	0.0-2.9	0.5-2.0	.43	.43			
	5-30	5-45	35-80	18-35	1.20-1.50	4.00-14.00	0.08-0.20	0.0-2.9	0.0-0.5	.28	.43			
	30-35	5-85	10-80	2-25	1.20-1.50	4.00-14.00	0.02-0.11	0.0-2.9	0.0-0.2	.15	.49			
	35-39	---	---	---	---	4.00-14.00	---	---	---	---	---			
	39-49	---	---	---	---	1.40-14.00	---	---	---	---	---			
Berks-----------	0-4	5-40	50-80	5-25	1.20-1.50	4.00-42.00	0.17-0.22	0.0-2.9	2.0-4.0	.37	.43	3	5	56
	4-8	5-45	35-80	5-30	1.20-1.60	4.00-42.00	0.05-0.17	0.0-2.9	0.0-0.5	.37	.55			
	8-23	5-45	35-80	5-30	1.20-1.60	4.00-42.00	0.05-0.11	0.0-2.9	0.0-0.5	.20	.55			
	23-34	10-50	35-75	5-20	1.20-1.60	14.00-42.00	0.04-0.11	0.0-2.9	0.0-0.5	.10	.64			
	34-36	---	---	---	---	1.40-14.00	---	---	---	---	---			
	36-46	---	---	---	---	0.42-1.40	---	---	---	---	---			
60C:														
Wharton---------	0-2	5-35	50-80	10-25	1.20-1.40	0.42-4.00	0.19-0.22	0.0-2.9	1.0-4.0	.43	.43	3	5	56
	2-9	5-40	40-80	10-30	1.20-1.40	0.42-4.00	0.13-0.22	0.0-2.9	0.5-2.0	.49	.49			
	9-35	5-40	40-80	18-35	1.20-1.50	0.42-4.00	0.13-0.22	0.0-2.9	0.2-1.0	.43	.43			
	35-55	5-40	40-80	12-27	1.20-1.50	0.42-4.00	0.11-0.20	0.0-2.9	0.1-0.5	.37	.49			
	55-65	5-65	25-80	5-30	1.20-1.50	0.42-4.00	0.05-0.20	0.0-2.9	0.0-0.2	.43	.55			
	65-75	---	---	---	---	0.42-1.40	---	---	---	---	---			
Gilpin----------	0-3	5-45	50-80	2-25	1.20-1.40	4.00-14.00	0.11-0.20	0.0-2.9	0.5-4.0	.43	.43	3	2	134
	3-5	5-45	35-80	2-25	1.20-1.40	4.00-14.00	0.10-0.20	0.0-2.9	0.5-2.0	.43	.43			
	5-30	5-45	35-80	18-35	1.20-1.50	4.00-14.00	0.08-0.20	0.0-2.9	0.0-0.5	.28	.43			
	30-35	5-85	10-80	2-25	1.20-1.50	4.00-14.00	0.02-0.11	0.0-2.9	0.0-0.2	.15	.49			
	35-39	---	---	---	---	4.00-14.00	---	---	---	---	---			
	39-49	---	---	---	---	1.40-14.00	---	---	---	---	---			
Marrowbone------	0-5	55-75	10-40	4-18	1.20-1.60	14.00-42.00	0.12-0.16	0.0-2.9	0.5-5.0	.24	.28	2	3	86
	5-22	55-75	10-40	2-18	1.20-1.70	14.00-42.00	0.07-0.14	0.0-2.9	0.1-2.0	.17	.28			
	22-33	55-85	2-40	2-15	1.30-1.70	14.00-42.00	0.04-0.14	0.0-2.9	0.0-0.2	.10	.28			
	33-45	---	---	---	---	1.40-14.00	---	---	---	---	---			
	45-55	---	---	---	---	0.00-1.40	---	---	---	---	---			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
61B:														
Wyrick----------	0-9	5-48	51-80	15-27	1.40-1.65	4.00-14.00	0.17-0.22	3.0-5.9	0.5-3.0	.28	.32	5	6	48
	9-60	5-51	29-80	20-35	1.50-1.65	4.00-14.00	0.10-0.22	3.0-5.9	0.0-0.5	.32	.43			
Marbie----------	0-6	5-48	51-80	15-27	1.25-1.45	4.00-14.00	0.17-0.22	0.0-2.9	0.5-3.0	.28	.37	4	6	48
	6-36	5-51	29-80	20-35	1.30-1.55	4.00-14.00	0.10-0.22	3.0-5.9	0.0-0.5	.37	.49			
	36-60	5-51	29-80	20-35	1.65-1.85	0.42-1.40	0.07-0.22	3.0-5.9	0.0-0.5	.43	.49			
	60-70	5-44	5-48	25-55	1.35-1.65	1.40-14.00	0.08-0.15	3.0-5.9	0.0-0.2	.37	.37			
61C:														
Wyrick----------	0-9	5-48	51-80	15-27	1.40-1.65	4.00-14.00	0.17-0.22	3.0-5.9	0.5-3.0	.28	.32	5	6	48
	9-60	5-51	29-80	20-35	1.50-1.65	4.00-14.00	0.10-0.22	3.0-5.9	0.0-0.5	.32	.43			
Marbie----------	0-6	5-48	51-80	15-27	1.25-1.45	4.00-14.00	0.17-0.22	0.0-2.9	0.5-3.0	.28	.37	4	6	48
	6-36	5-51	29-80	20-35	1.30-1.55	4.00-14.00	0.10-0.22	3.0-5.9	0.0-0.5	.37	.49			
	36-60	5-51	29-80	20-35	1.65-1.85	0.42-1.40	0.07-0.22	3.0-5.9	0.0-0.5	.43	.49			
	60-70	5-44	5-48	25-55	1.35-1.65	1.40-14.00	0.08-0.15	3.0-5.9	0.0-0.2	.37	.37			
W.														
Water														

Table 17.—Chemical Soil Properties

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
1E:				
Berks	0-6	4.0-11	3.0-8.0	4.5-5.5
	6-22	3.0-10	2.0-7.0	3.5-5.5
	22-32	3.0-10	2.0-7.0	3.5-5.5
	32-38	1.0-6.0	1.0-5.0	3.5-5.5
	38-48	---	---	---
Chiswell	0-2	4.0-11	3.0-8.0	3.6-6.0
	2-7	3.0-7.0	2.0-6.0	3.6-6.0
	7-12	1.0-7.0	1.0-6.0	3.6-6.0
	12-22	---	---	---
1F:				
Berks	0-6	4.0-11	3.0-8.0	4.5-5.5
	6-22	3.0-10	2.0-7.0	3.5-5.5
	22-32	3.0-10	2.0-7.0	3.5-5.5
	32-38	1.0-6.0	1.0-5.0	3.5-5.5
	38-48	---	---	---
Chiswell	0-2	4.0-11	3.0-8.0	3.6-6.0
	2-7	3.0-7.0	2.0-6.0	3.6-6.0
	7-12	1.0-7.0	1.0-6.0	3.6-6.0
	12-22	---	---	---
2D:				
Berks	0-6	4.0-11	3.0-8.0	4.5-5.5
	6-22	3.0-10	2.0-7.0	3.5-5.5
	22-32	3.0-10	2.0-7.0	3.5-5.5
	32-38	1.0-6.0	1.0-5.0	3.5-5.5
	38-48	---	---	---
Gilpin	0-3	5.0-12	4.0-9.0	4.0-5.5
	3-7	4.0-9.0	3.0-7.0	4.0-5.5
	7-31	5.0-10	3.0-7.0	4.0-5.5
	31-41	---	---	---
2E:				
Berks	0-6	4.0-11	3.0-8.0	4.5-5.5
	6-22	3.0-10	2.0-7.0	3.5-5.5
	22-32	3.0-10	2.0-7.0	3.5-5.5
	32-38	1.0-6.0	1.0-5.0	3.5-5.5
	38-48	---	---	---
Gilpin	0-3	5.0-12	4.0-9.0	4.0-5.5
	3-7	4.0-9.0	3.0-7.0	4.0-5.5
	7-31	5.0-10	3.0-7.0	4.0-5.5
	31-41	---	---	---
2F:				
Berks	0-6	4.0-11	3.0-8.0	4.5-5.5
	6-22	3.0-10	2.0-7.0	3.5-5.5
	22-32	3.0-10	2.0-7.0	3.5-5.5
	32-38	1.0-6.0	1.0-5.0	3.5-5.5
	38-48	---	---	---

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
2F:				
Gilpin----------------	0-3	5.0-12	4.0-9.0	4.0-5.5
	3-7	4.0-9.0	3.0-7.0	4.0-5.5
	7-31	5.0-10	3.0-7.0	4.0-5.5
	31-41	---	---	---
3C:				
Berks----------------	0-6	4.0-11	3.0-8.0	4.5-5.5
	6-22	3.0-10	2.0-7.0	3.5-5.5
	22-32	3.0-10	2.0-7.0	3.5-5.5
	32-38	1.0-6.0	1.0-5.0	3.5-5.5
	38-48	---	---	---
Groseclose-----------	0-10	8.0-16	6.0-12	3.6-5.5
	10-33	9.0-16	7.0-12	3.6-5.5
	33-62	4.0-11	3.0-8.0	3.6-5.5
3D:				
Berks----------------	0-6	4.0-11	3.0-8.0	4.5-5.5
	6-22	3.0-10	2.0-7.0	3.5-5.5
	22-32	3.0-10	2.0-7.0	3.5-5.5
	32-38	1.0-6.0	1.0-5.0	3.5-5.5
	38-48	---	---	---
Groseclose-----------	0-10	8.0-16	6.0-12	3.6-5.5
	10-33	9.0-16	7.0-12	3.6-5.5
	33-62	4.0-11	3.0-8.0	3.6-5.5
4D:				
Berks----------------	0-6	4.0-11	3.0-8.0	4.5-5.5
	6-22	3.0-10	2.0-7.0	4.5-5.5
	22-32	3.0-10	2.0-7.0	4.5-5.5
	32-38	1.0-6.0	1.0-5.0	4.5-5.5
	38-48	---	---	---
Poplimento-----------	0-5	7.9-16	5.9-12	4.5-6.5
	5-20	8.8-16	6.6-12	4.5-6.5
	20-35	8.8-16	6.6-12	4.5-6.5
	35-60	6.8-14	5.1-10	4.5-6.5
5C:				
Berks----------------	0-6	4.0-11	3.0-8.0	4.5-5.5
	6-22	3.0-10	2.0-7.0	3.5-5.5
	22-32	3.0-10	2.0-7.0	3.5-5.5
	32-38	1.0-6.0	1.0-5.0	3.5-5.5
	38-48	---	---	---
Weikert--------------	0-2	5.0-11	4.0-8.0	4.5-6.0
	2-8	4.0-8.0	3.0-6.0	3.5-6.0
	8-14	4.0-8.0	3.0-6.0	3.5-6.0
	14-24	---	---	---
5D:				
Berks----------------	0-6	4.0-11	3.0-8.0	4.5-5.5
	6-22	3.0-10	2.0-7.0	3.5-5.5
	22-32	3.0-10	2.0-7.0	3.5-5.5
	32-38	1.0-6.0	1.0-5.0	3.5-5.5
	38-48	---	---	---

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
5D:				
Weikert--------------	0-2	5.0-11	4.0-8.0	4.5-6.0
	2-8	4.0-8.0	3.0-6.0	3.5-6.0
	8-14	4.0-8.0	3.0-6.0	3.5-6.0
	14-24	---	---	---
5E:				
Berks----------------	0-6	4.0-11	3.0-8.0	4.5-5.5
	6-22	3.0-10	2.0-7.0	3.5-5.5
	22-32	3.0-10	2.0-7.0	3.5-5.5
	32-38	1.0-6.0	1.0-5.0	3.5-5.5
	38-48	---	---	---
Weikert--------------	0-2	5.0-11	4.0-8.0	4.5-6.0
	2-8	4.0-8.0	3.0-6.0	3.5-6.0
	8-14	4.0-8.0	3.0-6.0	3.5-6.0
	14-24	---	---	---
5F:				
Berks----------------	0-6	4.0-11	3.0-8.0	4.5-5.5
	6-22	3.0-10	2.0-7.0	3.5-5.5
	22-32	3.0-10	2.0-7.0	3.5-5.5
	32-38	1.0-6.0	1.0-5.0	3.5-5.5
	38-48	---	---	---
Weikert--------------	0-2	5.0-11	4.0-8.0	4.5-6.0
	2-8	4.0-8.0	3.0-6.0	3.5-6.0
	8-14	4.0-8.0	3.0-6.0	3.5-6.0
	14-24	---	---	---
6E:				
Berks----------------	0-6	4.0-11	3.0-8.0	4.5-5.5
	6-22	3.0-10	2.0-7.0	4.5-5.5
	22-32	3.0-10	2.0-7.0	4.5-5.5
	32-38	1.0-6.0	1.0-5.0	4.5-5.5
	38-48	---	---	---
Westmoreland---------	0-6	4.0-12	3.0-9.0	4.5-6.0
	6-36	4.5-10	3.0-7.0	4.5-6.0
	36-54	3.0-11	2.0-8.0	5.1-6.0
	54-64	---	---	---
6F:				
Berks----------------	0-6	4.0-11	3.0-8.0	4.5-5.5
	6-22	3.0-10	2.0-7.0	4.5-5.5
	22-32	3.0-10	2.0-7.0	4.5-5.5
	32-38	1.0-6.0	1.0-5.0	4.5-5.5
	38-48	---	---	---
Westmoreland---------	0-6	4.0-12	3.0-9.0	4.5-6.0
	6-36	4.5-10	3.0-7.0	4.5-6.0
	36-54	3.0-11	2.0-8.0	5.1-6.0
	54-64	---	---	---
7E:				
Bland----------------	0-4	7.5-19	5.6-14	5.1-7.3
	4-30	16-22	12-17	5.1-7.3
	30-36	7.0-19	5.2-14	5.1-7.3
	36-46	---	---	---

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
8D:				
Bland----------------	0-4	7.5-19	5.6-14	5.1-7.3
	4-30	16-22	12-17	5.1-7.3
	30-36	7.0-19	5.2-14	5.1-7.3
	36-46	---	---	---
Rock outcrop.				
8E:				
Bland----------------	0-4	7.5-19	5.6-14	5.1-7.3
	4-30	16-22	12-17	5.1-7.3
	30-36	7.0-19	5.2-14	5.1-7.3
	36-46	---	---	---
Rock outcrop.				
9D:				
Bland----------------	0-4	7.5-19	5.6-14	5.1-7.3
	4-30	16-22	12-17	5.1-7.3
	30-36	7.0-19	5.2-14	5.1-7.3
	36-46	---	---	---
Rock outcrop.				
10D:				
Calvin---------------	0-9	4.0-11	3.0-8.0	4.5-6.0
	9-25	3.0-7.0	2.0-6.0	4.5-6.0
	25-30	3.0-7.0	2.0-6.0	4.5-6.0
	30-40	---	---	---
11F:				
Calvin---------------	0-9	4.0-11	3.0-8.0	4.5-6.0
	9-25	3.0-7.0	2.0-6.0	4.5-6.0
	25-30	3.0-7.0	2.0-6.0	4.5-6.0
	30-40	---	---	---
Rough----------------	0-2	4.0-11	3.0-8.0	3.6-5.0
	2-8	3.0-8.0	2.0-6.0	3.6-5.0
	8-10	3.0-8.0	2.0-6.0	3.6-5.0
	10-20	---	---	---
12C:				
Carbo----------------	0-6	11-20	8.0-15	4.5-7.3
	6-29	21-29	16-22	5.6-7.8
	29-39	---	---	---
Beech Grove----------	0-4	5.0-15	4.0-11	6.1-8.4
	4-14	---	---	---
12D:				
Carbo----------------	0-6	11-20	8.0-15	4.5-7.3
	6-29	21-29	16-22	5.6-7.8
	29-39	---	---	---
Beech Grove----------	0-4	5.0-15	4.0-11	6.1-8.4
	4-14	---	---	---

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
12E:				
Carbo----------------	0-6	11-20	8.0-15	4.5-7.3
	6-29	21-29	16-22	5.6-7.8
	29-39	---	---	---
Beech Grove----------	0-4	5.0-15	4.0-11	6.1-8.4
	4-14	---	---	---
12F:				
Carbo----------------	0-6	11-20	8.0-15	4.5-7.3
	6-29	21-29	16-22	5.6-7.8
	29-39	---	---	---
Beech Grove----------	0-4	5.0-15	4.0-11	6.1-8.4
	4-14	---	---	---
13C:				
Carbo----------------	0-6	11-20	8.0-15	4.5-7.3
	6-29	21-29	16-22	5.6-7.8
	29-39	---	---	---
Frederick------------	0-2	5.0-12	4.0-9.0	4.5-6.0
	2-8	8.0-15	6.0-11	4.5-6.0
	8-16	9.0-16	7.0-12	4.5-6.0
	16-62	10-20	8.0-15	4.5-6.0
Urban land.				
14D:				
Carbo----------------	0-6	11-20	8.0-15	4.5-7.3
	6-29	21-29	16-22	5.6-7.8
	29-39	---	---	---
Rock outcrop.				
14E:				
Carbo----------------	0-6	11-20	8.0-15	4.5-7.3
	6-29	21-29	16-22	5.6-7.8
	29-39	---	---	---
Rock outcrop.				
15D:				
Carbo----------------	0-6	11-20	8.0-15	4.5-7.3
	6-29	21-29	16-22	5.6-7.8
	29-39	---	---	---
Rock outcrop.				
16C:				
Cedarcreek-----------	0-3	4.0-8.0	3.0-6.0	3.5-5.5
	3-15	4.0-7.0	3.0-5.0	3.5-5.5
	15-65	5.0-7.0	3.0-5.0	3.5-5.5
Sewell---------------	0-4	1.0-6.0	1.0-4.0	3.5-5.5
	4-9	1.0-5.0	1.0-4.0	3.5-5.5
	9-65	1.0-5.0	1.0-4.0	3.5-5.5
Rock outcrop.				

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
17A:				
Chagrin--------------	0-6	5.0-15	4.0-11	5.6-7.3
	6-42	5.0-11	4.0-8.0	5.6-7.3
	42-62	2.0-9.0	1.0-6.0	5.1-7.3
18.				
Dumps, mine-Urban land				
19C:				
Frederick------------	0-2	5.0-12	4.0-9.0	4.5-6.0
	2-8	8.0-15	6.0-11	4.5-6.0
	8-16	9.0-16	7.0-12	4.5-6.0
	16-62	10-20	8.0-15	4.5-6.0
19D:				
Frederick------------	0-2	5.0-12	4.0-9.0	4.5-6.0
	2-8	8.0-15	6.0-11	4.5-6.0
	8-16	9.0-16	7.0-12	4.5-6.0
	16-62	10-20	8.0-15	4.5-6.0
19E:				
Frederick------------	0-2	5.0-12	4.0-9.0	4.5-6.0
	2-8	8.0-15	6.0-11	4.5-6.0
	8-16	9.0-16	7.0-12	4.5-6.0
	16-62	10-20	8.0-15	4.5-6.0
19F:				
Frederick------------	0-2	5.0-12	4.0-9.0	4.5-6.0
	2-8	8.0-15	6.0-11	4.5-6.0
	8-16	9.0-16	7.0-12	4.5-6.0
	16-62	10-20	8.0-15	4.5-6.0
20C:				
Frederick------------	0-2	5.0-12	4.0-9.0	4.5-6.0
	2-8	8.0-15	6.0-11	4.5-6.0
	8-16	9.0-16	7.0-12	4.5-6.0
	16-62	10-20	8.0-15	4.5-6.0
20D:				
Frederick------------	0-2	5.0-12	4.0-9.0	4.5-6.0
	2-8	8.0-15	6.0-11	4.5-6.0
	8-16	9.0-16	7.0-12	4.5-6.0
	16-62	10-20	8.0-15	4.5-6.0
21C:				
Frederick------------	0-2	5.0-12	4.0-9.0	4.5-6.0
	2-6	8.0-15	6.0-11	4.5-6.0
	6-13	9.0-16	7.0-12	4.5-6.0
	13-62	10-20	8.0-15	4.5-6.0
21D:				
Frederick------------	0-2	5.0-12	4.0-9.0	4.5-6.0
	2-6	8.0-15	6.0-11	4.5-6.0
	6-13	9.0-16	7.0-12	4.5-6.0
	13-62	10-20	8.0-15	4.5-6.0

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
21E:				
Frederick------------	0-2	5.0-12	4.0-9.0	4.5-6.0
	2-6	8.0-15	6.0-11	4.5-6.0
	6-13	9.0-16	7.0-12	4.5-6.0
	13-62	10-20	8.0-15	4.5-6.0
21F:				
Frederick------------	0-2	5.0-12	4.0-9.0	4.5-6.0
	2-6	8.0-15	6.0-11	4.5-6.0
	6-13	9.0-16	7.0-12	4.5-6.0
	13-62	10-20	8.0-15	4.5-6.0
22C:				
Frederick------------	0-2	5.0-12	4.0-9.0	4.5-6.0
	2-6	8.0-15	6.0-11	4.5-6.0
	6-13	9.0-16	7.0-12	4.5-6.0
	13-62	10-20	8.0-15	4.5-6.0
22D:				
Frederick------------	0-2	5.0-12	4.0-9.0	4.5-6.0
	2-6	8.0-15	6.0-11	4.5-6.0
	6-13	9.0-16	7.0-12	4.5-6.0
	13-62	10-20	8.0-15	4.5-6.0
23D:				
Gilpin---------------	0-3	5.0-12	4.0-9.0	4.0-5.5
	3-7	4.0-9.0	3.0-7.0	4.0-5.5
	7-31	5.0-10	3.0-7.0	4.0-5.5
	31-41	---	---	---
24D:				
Gilpin---------------	0-3	2.0-15	1.0-11	3.6-5.5
	3-5	2.0-11	1.0-8.0	3.6-5.5
	5-30	4.0-10	3.0-7.0	3.6-5.5
	30-35	1.0-7.0	1.0-5.0	3.6-5.5
	35-39	---	---	---
	39-49	---	---	---
Berks----------------	0-4	6.0-15	4.0-11	4.5-6.5
	4-8	1.0-9.0	1.0-7.0	4.5-6.5
	8-23	1.0-9.0	1.0-7.0	4.5-6.5
	23-34	1.0-6.0	1.0-5.0	4.5-6.5
	34-36	---	---	---
	36-46	---	---	---
24F:				
Gilpin---------------	0-3	2.0-15	1.0-11	3.6-5.5
	3-5	2.0-11	1.0-8.0	3.6-5.5
	5-30	4.0-10	3.0-7.0	3.6-5.5
	30-35	1.0-7.0	1.0-5.0	3.6-5.5
	35-39	---	---	---
	39-49	---	---	---
Berks----------------	0-4	6.0-15	4.0-11	4.5-6.5
	4-8	1.0-9.0	1.0-7.0	4.5-6.5
	8-23	1.0-9.0	1.0-7.0	4.5-6.5
	23-34	1.0-6.0	1.0-5.0	4.5-6.5
	34-36	---	---	---
	36-46	---	---	---

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
25E:				
Gilpin---------------	0-3	5.0-12	4.0-9.0	4.0-5.5
	3-7	4.0-9.0	3.0-7.0	4.0-5.5
	7-31	5.0-10	3.0-7.0	4.0-5.5
	31-41	---	---	---
Shelocta-------------	0-3	4.0-13	3.0-10	4.0-5.5
	3-55	5.0-10	3.0-7.0	4.0-5.5
	55-70	10-19	8.0-14	4.0-5.5
26F:				
Gilpin---------------	0-3	5.0-12	4.0-9.0	4.0-5.5
	3-7	4.0-9.0	3.0-7.0	4.0-5.5
	7-31	5.0-10	3.0-7.0	4.0-5.5
	31-41	---	---	---
Shelocta-------------	0-3	4.0-13	3.0-10	4.0-5.5
	3-55	5.0-10	3.0-7.0	4.0-5.5
	55-70	10-19	8.0-14	4.0-5.5
27A:				
Grigsby--------------	0-13	4.0-16	3.0-12	5.6-7.3
	13-49	1.0-9.0	1.0-6.0	5.6-7.3
	49-65	1.0-6.0	1.0-4.0	5.1-7.3
28C:				
Highsplint-----------	0-3	2.0-12	2.0-9.0	3.5-6.5
	3-59	1.0-10	1.0-7.0	3.5-5.5
	59-82	1.0-7.0	1.0-6.0	3.5-5.5
28D:				
Highsplint-----------	0-3	2.0-12	2.0-9.0	3.5-6.5
	3-59	1.0-10	1.0-7.0	3.5-5.5
	59-82	1.0-7.0	1.0-6.0	3.5-5.5
29F:				
Highsplint-----------	0-3	2.0-12	2.0-9.0	3.5-6.5
	3-59	1.0-10	1.0-7.0	3.5-5.5
	59-82	1.0-7.0	1.0-6.0	3.5-5.5
Shelocta-------------	0-4	3.0-13	2.0-10	4.5-5.5
	4-13	2.0-10	1.0-7.0	4.5-5.5
	13-50	5.0-10	1.0-7.0	4.5-5.5
	50-86	2.0-10	1.0-7.0	4.5-5.5
30A:				
Holly----------------	0-4	6.0-18	4.5-14	5.1-7.3
	4-34	5.1-11	3.8-8.2	5.1-7.3
	34-62	1.8-12	1.4-9.2	5.1-7.3
31D:				
Kaymine--------------	0-4	2.0-6.0	1.0-5.0	5.6-7.8
	4-28	2.0-7.0	1.0-5.0	5.6-7.8
	28-64	2.0-7.0	1.0-5.0	5.6-7.8
32E:				
Kaymine--------------	0-4	2.0-6.0	1.0-5.0	5.6-7.8
	4-28	2.0-7.0	1.0-5.0	5.6-7.8
	28-64	2.0-7.0	1.0-5.0	5.6-7.8

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
32E:				
Cedarcreek-----------	0-3	4.0-8.0	3.0-6.0	3.5-5.5
	3-15	4.0-7.0	3.0-5.0	3.5-5.5
	15-65	5.0-7.0	3.0-5.0	3.5-5.5
33F:				
Kaymine--------------	0-4	2.0-6.0	1.0-5.0	5.6-7.8
	4-28	2.0-7.0	1.0-5.0	5.6-7.8
	28-64	2.0-7.0	1.0-5.0	5.6-7.8
Fiveblock------------	0-6	1.0-6.0	1.0-4.0	5.6-7.8
	6-25	1.0-5.0	1.0-4.0	5.6-7.8
	25-65	1.0-5.0	1.0-4.0	5.6-7.8
34C:				
Kaymine--------------	0-4	2.0-6.0	1.0-5.0	5.6-7.8
	4-28	2.0-7.0	1.0-5.0	5.6-7.8
	28-64	2.0-7.0	1.0-5.0	5.6-7.8
Fiveblock------------	0-6	1.0-6.0	1.0-4.0	5.6-7.8
	6-25	1.0-5.0	1.0-4.0	5.6-7.8
	25-65	1.0-5.0	1.0-4.0	5.6-7.8
Cedarcreek-----------	0-3	4.0-8.0	3.0-6.0	3.5-5.5
	3-15	4.0-7.0	3.0-5.0	3.5-5.5
	15-65	5.0-7.0	3.0-5.0	3.5-5.5
35C:				
Lily-----------------	0-3	2.0-10	2.0-7.0	4.5-5.5
	3-7	1.0-7.0	1.0-5.0	4.5-5.5
	7-24	5.0-10	3.0-7.0	4.5-5.5
	24-28	4.0-10	3.0-7.0	4.5-5.5
	28-38	---	---	---
35D:				
Lily-----------------	0-3	2.0-10	2.0-7.0	4.5-5.5
	3-7	1.0-7.0	1.0-5.0	4.5-5.5
	7-24	5.0-10	3.0-7.0	4.5-5.5
	24-28	4.0-10	3.0-7.0	4.5-5.5
	28-38	---	---	---
35E:				
Lily-----------------	0-3	2.0-10	2.0-7.0	4.5-5.5
	3-7	1.0-7.0	1.0-5.0	4.5-5.5
	7-24	5.0-10	3.0-7.0	4.5-5.5
	24-28	4.0-10	3.0-7.0	4.5-5.5
	28-38	---	---	---
36A:				
Lobdell--------------	0-8	6.0-16	5.0-12	5.1-7.3
	8-48	5.0-8.0	3.0-6.0	5.1-7.3
	48-62	5.0-8.0	3.0-6.0	5.6-7.3
Orrville-------------	0-6	6.0-16	5.0-12	5.1-6.5
	6-34	5.0-9.0	4.0-7.0	5.1-6.5
	34-62	5.0-10	4.0-7.0	5.1-7.3

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
37D:				
Mandy----------------	0-4	2.9-13	2.2-9.8	3.5-5.5
	4-6	1.8-8.5	1.3-6.4	3.5-5.5
	6-10	2.5-7.9	1.9-5.9	3.5-5.5
	10-29	2.5-7.9	1.9-5.9	3.5-5.5
	29-37	2.5-7.9	1.9-5.9	3.5-5.5
	37-47	---	---	---
Paddyknob------------	0-3	4.0-15	3.0-12	3.5-5.5
	3-6	2.0-12	2.0-10	3.5-5.5
	6-26	2.0-12	2.0-10	3.5-5.5
	26-36	---	---	---
Rock outcrop.				
38D:				
Marrowbone-----------	0-5	2.0-16	2.0-12	4.5-6.0
	5-22	1.0-9.0	1.0-7.0	4.5-6.0
	22-33	1.0-4.0	1.0-3.0	4.5-6.0
	33-45	---	---	---
	45-55	---	---	---
38E:				
Marrowbone-----------	0-5	2.0-16	2.0-12	4.5-6.0
	5-22	1.0-9.0	1.0-7.0	4.5-6.0
	22-33	1.0-4.0	1.0-3.0	4.5-6.0
	33-45	---	---	---
	45-55	---	---	---
38F:				
Marrowbone-----------	0-5	2.0-16	2.0-12	4.5-6.0
	5-22	1.0-9.0	1.0-7.0	4.5-6.0
	22-33	1.0-4.0	1.0-3.0	4.5-6.0
	33-45	---	---	---
	45-55	---	---	---
39D:				
Marrowbone-----------	0-5	2.0-16	2.0-12	4.5-6.0
	5-22	1.0-9.0	1.0-7.0	4.5-6.0
	22-33	1.0-4.0	1.0-3.0	4.5-6.0
	33-45	---	---	---
	45-55	---	---	---
Gilpin---------------	0-3	2.0-15	1.0-11	3.6-5.5
	3-5	2.0-11	1.0-8.0	3.6-5.5
	5-30	4.0-10	3.0-7.0	3.6-5.5
	30-35	1.0-7.0	1.0-5.0	3.6-5.5
	35-39	---	---	---
	39-49	---	---	---
39E:				
Marrowbone-----------	0-5	2.0-16	2.0-12	4.5-6.0
	5-22	1.0-9.0	1.0-7.0	4.5-6.0
	22-33	1.0-4.0	1.0-3.0	4.5-6.0
	33-45	---	---	---
	45-55	---	---	---

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
39E:				
Gilpin	0-3	2.0-15	1.0-11	3.6-5.5
	3-5	2.0-11	1.0-8.0	3.6-5.5
	5-30	4.0-10	3.0-7.0	3.6-5.5
	30-35	1.0-7.0	1.0-5.0	3.6-5.5
	35-39	---	---	---
	39-49	---	---	---
39F:				
Marrowbone	0-5	2.0-16	2.0-12	4.5-6.0
	5-22	1.0-9.0	1.0-7.0	4.5-6.0
	22-33	1.0-4.0	1.0-3.0	4.5-6.0
	33-45	---	---	---
	45-55	---	---	---
Gilpin	0-3	2.0-15	1.0-11	3.6-5.5
	3-5	2.0-11	1.0-8.0	3.6-5.5
	5-30	4.0-10	3.0-7.0	3.6-5.5
	30-35	1.0-7.0	1.0-5.0	3.6-5.5
	35-39	---	---	---
	39-49	---	---	---
40F:				
Matewan	0-4	2.0-10	1.0-7.0	3.5-6.0
	4-21	1.0-6.0	1.0-4.0	3.5-5.5
	21-38	1.0-5.0	1.0-4.0	3.5-5.5
	38-48	---	---	---
Rock outcrop.				
41A:				
Ogles	0-6	4.0-14	3.0-10	4.5-6.0
	6-10	3.0-9.0	2.0-7.0	4.5-6.0
	10-23	2.0-9.0	2.0-7.0	4.5-6.0
	23-65	2.0-7.0	1.0-5.0	4.5-6.0
42C:				
Oriskany	0-6	2.4-12	1.8-8.8	4.5-5.5
	6-17	1.8-7.9	1.3-5.9	4.5-5.5
	17-70	3.8-9.9	2.8-7.4	4.5-5.5
42D:				
Oriskany	0-6	2.4-12	1.8-8.8	4.5-5.5
	6-17	1.8-7.9	1.3-5.9	4.5-5.5
	17-70	3.8-9.9	2.8-7.4	4.5-5.5
42E:				
Oriskany	0-6	2.4-12	1.8-8.8	4.5-5.5
	6-17	1.8-7.9	1.3-5.9	4.5-5.5
	17-70	3.8-9.9	2.8-7.4	4.5-5.5
43.				
Pits, quarry				
44C:				
Poplimento	0-5	7.9-16	5.9-12	4.5-6.5
	5-20	8.8-16	6.6-12	4.5-6.5
	20-35	8.8-16	6.6-12	4.5-6.5
	35-60	6.8-14	5.1-10	4.5-6.5

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
44C:				
Westmoreland---------	0-6	4.0-12	3.0-9.0	4.5-6.0
	6-36	4.5-10	3.0-7.0	4.5-6.0
	36-54	3.0-11	2.0-8.0	5.1-6.0
	54-64	---	---	---
45F:				
Ramsey---------------	0-5	2.0-8.0	2.0-6.0	4.5-5.5
	5-17	1.0-6.0	1.0-4.0	4.5-5.5
	17-27	---	---	---
Rock outcrop.				
46F:				
Rock outcrop.				
Beech Grove----------	0-4	5.0-15	4.0-11	6.1-8.4
	4-14	---	---	---
Benthole-------------	0-3	4.0-14	3.0-10	6.6-8.4
	3-37	5.0-10	3.0-7.0	6.6-8.4
	37-63	5.0-10	3.0-7.0	6.6-8.4
47F:				
Sewell---------------	0-4	1.0-6.0	1.0-4.0	3.5-5.5
	4-9	1.0-5.0	1.0-4.0	3.5-5.5
	9-65	1.0-5.0	1.0-4.0	3.5-5.5
Kaymine--------------	0-4	2.0-6.0	1.0-5.0	5.6-7.8
	4-28	2.0-7.0	1.0-5.0	5.6-7.8
	28-64	2.0-7.0	1.0-5.0	5.6-7.8
Rock outcrop.				
48E:				
Shelocta-------------	0-4	3.0-13	2.0-10	4.5-5.5
	4-13	2.0-10	1.0-7.0	4.5-5.5
	13-50	5.0-10	1.0-7.0	4.5-5.5
	50-86	2.0-10	1.0-7.0	4.5-5.5
Cedarcreek-----------	0-3	4.0-8.0	3.0-6.0	3.5-5.5
	3-15	4.0-7.0	3.0-5.0	3.5-5.5
	15-65	5.0-7.0	3.0-5.0	3.5-5.5
49E:				
Shelocta-------------	0-4	3.0-13	2.0-10	4.5-5.5
	4-13	2.0-10	1.0-7.0	4.5-5.5
	13-50	5.0-10	1.0-7.0	4.5-5.5
	50-86	2.0-10	1.0-7.0	4.5-5.5
Highsplint-----------	0-3	2.0-12	2.0-9.0	3.5-6.5
	3-59	1.0-10	1.0-7.0	3.5-5.5
	59-82	1.0-7.0	1.0-6.0	3.5-5.5
50F:				
Shelocta-------------	0-4	3.0-13	2.0-10	4.5-5.5
	4-13	2.0-10	1.0-7.0	4.5-5.5
	13-50	5.0-10	1.0-7.0	4.5-5.5
	50-86	2.0-10	1.0-7.0	4.5-5.5

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
50F:				
Kaymine--------------	0-4	2.0-6.0	1.0-5.0	5.6-7.8
	4-28	2.0-7.0	1.0-5.0	5.6-7.8
	28-64	2.0-7.0	1.0-5.0	5.6-7.8
51F:				
Stonecoal------------	0-31	1.0-3.6	0.8-2.7	5.6-9.0
	31-39	1.0-4.9	0.8-3.7	5.6-9.0
	39-68	1.0-3.6	0.8-2.7	5.6-9.0
52C:				
Tumbling-------------	0-6	2.0-7.0	2.0-5.0	4.5-6.0
	6-19	3.0-6.0	2.0-5.0	4.5-5.5
	19-47	4.0-6.0	3.0-5.0	4.5-5.5
	47-65	4.0-6.0	3.0-5.0	4.5-5.5
52D:				
Tumbling-------------	0-6	2.0-7.0	2.0-5.0	4.5-6.0
	6-19	3.0-6.0	2.0-5.0	4.5-5.5
	19-47	4.0-6.0	3.0-5.0	4.5-5.5
	47-65	4.0-6.0	3.0-5.0	4.5-5.5
53E:				
Tumbling-------------	0-6	2.0-7.0	2.0-5.0	4.5-6.0
	6-19	3.0-6.0	2.0-5.0	4.5-5.5
	19-47	4.0-6.0	3.0-5.0	4.5-5.5
	47-65	4.0-6.0	3.0-5.0	4.5-5.5
54F.				
Udorthents-Urban land				
55D:				
Wallen---------------	0-4	5.0-12	3.8-8.6	4.5-6.0
	4-24	2.8-8.1	2.1-6.1	4.5-6.0
	24-34	---	---	---
55F:				
Wallen---------------	0-4	5.0-12	3.8-8.6	4.5-6.0
	4-24	2.8-8.1	2.1-6.1	4.5-6.0
	24-34	---	---	---
56D:				
Wallen---------------	0-4	5.0-12	3.8-8.6	4.5-6.0
	4-24	2.8-8.1	2.1-6.1	4.5-6.0
	24-34	---	---	---
Rock outcrop.				
56F:				
Wallen---------------	0-4	5.0-12	3.8-8.6	4.5-6.0
	4-24	2.8-8.1	2.1-6.1	4.5-6.0
	24-34	---	---	---
Rock outcrop.				
57C:				
Watahala-------------	0-4	4.0-12	3.0-9.0	3.6-5.5
	4-28	3.0-8.0	2.0-6.0	3.6-5.5
	28-42	5.0-10	4.0-7.0	3.6-5.5
	42-60	10-19	8.0-14	4.5-5.5

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
57D:				
Watahala	0-4	4.0-12	3.0-9.0	3.6-5.5
	4-28	3.0-8.0	2.0-6.0	3.6-5.5
	28-42	5.0-10	4.0-7.0	3.6-5.5
	42-60	10-19	8.0-14	4.5-5.5
57E:				
Watahala	0-4	4.0-12	3.0-9.0	3.6-5.5
	4-28	3.0-8.0	2.0-6.0	3.6-5.5
	28-42	5.0-10	4.0-7.0	3.6-5.5
	42-60	10-19	8.0-14	4.5-5.5
57F:				
Watahala	0-4	4.0-12	3.0-9.0	3.6-5.5
	4-28	3.0-8.0	2.0-6.0	3.6-5.5
	28-42	5.0-10	4.0-7.0	3.6-5.5
	42-60	10-19	8.0-14	4.5-5.5
58D:				
Watahala	0-4	4.0-12	3.0-9.0	3.6-5.5
	4-28	3.0-8.0	2.0-6.0	3.6-5.5
	28-42	5.0-10	4.0-7.0	3.6-5.5
	42-60	10-19	8.0-14	4.5-5.5
58E:				
Watahala	0-4	4.0-12	3.0-9.0	3.6-5.5
	4-28	3.0-8.0	2.0-6.0	3.6-5.5
	28-42	5.0-10	4.0-7.0	3.6-5.5
	42-60	10-19	8.0-14	4.5-5.5
59D:				
Wharton	0-2	5.0-15	4.0-11	3.5-5.5
	2-9	4.0-12	3.0-9.0	3.5-5.5
	9-35	5.0-11	4.0-8.0	3.5-5.5
	35-55	3.0-8.0	2.0-6.0	3.5-5.5
	55-65	1.0-8.0	1.0-6.0	3.5-5.5
	65-75	---	---	---
Gilpin	0-3	2.0-15	1.0-11	3.6-5.5
	3-5	2.0-11	1.0-8.0	3.6-5.5
	5-30	4.0-10	3.0-7.0	3.6-5.5
	30-35	1.0-7.0	1.0-5.0	3.6-5.5
	35-39	---	---	---
	39-49	---	---	---
Berks	0-4	6.0-15	4.0-11	4.5-6.5
	4-8	1.0-9.0	1.0-7.0	4.5-6.5
	8-23	1.0-9.0	1.0-7.0	4.5-6.5
	23-34	1.0-6.0	1.0-5.0	4.5-6.5
	34-36	---	---	---
	36-46	---	---	---
60C:				
Wharton	0-2	5.0-15	4.0-11	3.5-5.5
	2-9	4.0-12	3.0-9.0	3.5-5.5
	9-35	5.0-11	4.0-8.0	3.5-5.5
	35-55	3.0-8.0	2.0-6.0	3.5-5.5
	55-65	1.0-8.0	1.0-6.0	3.5-5.5
	65-75	---	---	---

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
60C:				
Gilpin---------------	0-3	2.0-15	1.0-11	3.6-5.5
	3-5	2.0-11	1.0-8.0	3.6-5.5
	5-30	4.0-10	3.0-7.0	3.6-5.5
	30-35	1.0-7.0	1.0-5.0	3.6-5.5
	35-39	---	---	---
	39-49	---	---	---
Marrowbone-----------	0-5	2.0-16	2.0-12	4.5-6.0
	5-22	1.0-9.0	1.0-7.0	4.5-6.0
	22-33	1.0-4.0	1.0-3.0	4.5-6.0
	33-45	---	---	---
	45-55	---	---	---
61B:				
Wyrick---------------	0-9	5.0-14	4.0-10	4.2-5.5
	9-60	5.0-10	4.0-7.0	4.2-5.5
Marbie---------------	0-6	5.0-14	4.0-10	4.2-5.5
	6-36	5.0-10	4.0-7.0	4.2-5.5
	36-60	5.0-10	4.0-7.0	4.2-5.5
	60-70	6.0-14	5.0-11	4.2-5.5
61C:				
Wyrick---------------	0-9	5.0-14	4.0-10	4.2-5.5
	9-60	5.0-10	4.0-7.0	4.2-5.5
Marbie---------------	0-6	5.0-14	4.0-10	4.2-5.5
	6-36	5.0-10	4.0-7.0	4.2-5.5
	36-60	5.0-10	4.0-7.0	4.2-5.5
	60-70	6.0-14	5.0-11	4.2-5.5
W.				
Water				

Table 18.—Water Features

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
1E:										
Berks	C	High	Jan-Dec	---	---	---	---	None	---	None
Chiswell	D	High	Jan-Dec	---	---	---	---	None	---	None
1F:										
Berks	C	High	Jan-Dec	---	---	---	---	None	---	None
Chiswell	D	High	Jan-Dec	---	---	---	---	None	---	None
2D:										
Berks	C	High	Jan-Dec	---	---	---	---	None	---	None
Gilpin	C	High	Jan-Dec	---	---	---	---	None	---	None
2E:										
Berks	C	High	Jan-Dec	---	---	---	---	None	---	None
Gilpin	C	High	Jan-Dec	---	---	---	---	None	---	None
2F:										
Berks	C	High	Jan-Dec	---	---	---	---	None	---	None
Gilpin	C	High	Jan-Dec	---	---	---	---	None	---	None
3C:										
Berks	C	Medium	Jan-Dec	---	---	---	---	None	---	None
Groseclose	C	High	Jan-Dec	---	---	---	---	None	---	None
3D:										
Berks	C	High	Jan-Dec	---	---	---	---	None	---	None
Groseclose	C	Very high	Jan-Dec	---	---	---	---	None	---	None
4D:										
Berks	C	High								
			Jan-Dec	---	---	---	---	None	---	None
Poplimento	C	High	Jan-Dec	---	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
5C:										
Berks	C	Medium	Jan-Dec	---	---	---	---	None	---	None
Weikert	D	Medium	Jan-Dec	---	---	---	---	None	---	None
5D:										
Berks	C	High	Jan-Dec	---	---	---	---	None	---	None
Weikert	D	High	Jan-Dec	---	---	---	---	None	---	None
5E:										
Berks	C	High	Jan-Dec	---	---	---	---	None	---	None
Weikert	D	High	Jan-Dec	---	---	---	---	None	---	None
5F:										
Berks	C	High	Jan-Dec	---	---	---	---	None	---	None
Weikert	D	High	Jan-Dec	---	---	---	---	None	---	None
6E:										
Berks	C	High	Jan-Dec	---	---	---	---	None	---	None
Westmoreland	B	High	Jan-Dec	---	---	---	---	None	---	None
6F:										
Berks	C	High	Jan-Dec	---	---	---	---	None	---	None
Westmoreland	B	High	Jan-Dec	---	---	---	---	None	---	None
7E:										
Bland	C	Very high	Jan-Dec	---	---	---	---	None	---	None
8D:										
Bland	C	High	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										
8E:										
Bland	C	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										
9D:										
Bland	C	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
10D:										
Calvin	C	High	Jan-Dec	---	---	---	---	None	---	None
11F:										
Calvin	C	High	Jan-Dec	---	---	---	---	None	---	None
Rough	D	Very high	Jan-Dec	---	---	---	---	None	---	None
12C:										
Carbo	C	High	Jan-Dec	---	---	---	---	None	---	None
Beech Grove	C	High	Jan-Dec	---	---	---	---	None	---	None
12D:										
Carbo	C	Very high	Jan-Dec	---	---	---	---	None	---	None
Beech Grove	C	Very high	Jan-Dec	---	---	---	---	None	---	None
12E:										
Carbo	C	Very high	Jan-Dec	---	---	---	---	None	---	None
Beech Grove	C	Very high	Jan-Dec	---	---	---	---	None	---	None
12F:										
Carbo	C	Very high	Jan-Dec	---	---	---	---	None	---	None
Beech Grove	C	Very high	Jan-Dec	---	---	---	---	None	---	None
13C:										
Carbo	C	High	Jan-Dec	---	---	---	---	None	---	None
Frederick	B	Medium	Jan-Dec	---	---	---	---	None	---	None
Urban land.										
14D:										
Carbo	C	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										
14E:										
Carbo	C	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
15D:										
Carbo	C	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										
16C:										
Cedarcreek	C	Medium	Jan-Dec	---	---	---	---	None	---	None
Sewell	C	Low	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										
17A:										
Chagrin	B	Low	Jan-April	4.0-6.0	>6.0	---	---	None	Very brief	Occasional
			May	6.0-6.6	>6.0	---	---	None	Very brief	Occasional
			June-Oct	---	---	---	---	None	Very brief	Rare
			November	6.0-6.6	>6.0	---	---	None	Very brief	Occasional
			December	4.0-6.0	>6.0	---	---	None	Very brief	Occasional
18.										
Dumps, mine-Urban land										
19C:										
Frederick	B	Medium	Jan-Dec	---	---	---	---	None	---	None
19D:										
Frederick	B	High	Jan-Dec	---	---	---	---	None	---	None
19E:										
Frederick	B	High	Jan-Dec	---	---	---	---	None	---	None
19F:										
Frederick	B	High	Jan-Dec	---	---	---	---	None	---	None
20C:										
Frederick	B	Medium	Jan-Dec	---	---	---	---	None	---	None
20D:										
Frederick	B	High	Jan-Dec	---	---	---	---	None	---	None
21C:										
Frederick	B	Medium	Jan-Dec	---	---	---	---	None	---	None
21D:										
Frederick	B	High	Jan-Dec	---	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
21E:										
Frederick	B	High	Jan-Dec	---	---	---	---	None	---	None
21F:										
Frederick	B	High	Jan-Dec	---	---	---	---	None	---	None
22C:										
Frederick	B	Medium	Jan-Dec	---	---	---	---	None	---	None
22D:										
Frederick	B	High	Jan-Dec	---	---	---	---	None	---	None
23D:										
Gilpin	C	High	Jan-Dec	---	---	---	---	None	---	None
24D:										
Gilpin	C	High	Jan-Dec	---	---	---	---	None	---	None
Berks	C	High	Jan-Dec	---	---	---	---	None	---	None
24F:										
Gilpin	C	High	Jan-Dec	---	---	---	---	None	---	None
Berks	C	High	Jan-Dec	---	---	---	---	None	---	None
25E:										
Gilpin	C	High	Jan-Dec	---	---	---	---	None	---	None
Shelocta	B	High	Jan-Dec	---	---	---	---	None	---	None
26F:										
Gilpin	C	High	Jan-Dec	---	---	---	---	None	---	None
Shelocta	B	High	Jan-Dec	---	---	---	---	None	---	None
27A:										
Grigsby	B	Very low	Jan-April	3.5-6.0	>6.0	---	---	None	Very brief	Occasional
			May	4.3-6.0	>6.0	---	---	None	Very brief	Occasional
			June-Nov	---	---	---	---	None	Very brief	Rare
			December	4.3-6.0	>6.0	---	---	None	Very brief	Occasional
28C:										
Highsplint	B	Medium	Jan-Dec	---	---	---	---	None	---	None
28D:										
Highsplint	B	High	Jan-Dec	---	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
29F:										
Highsplint	B	High	Jan-Dec	---	---	---	---	None	---	None
Shelocta	B	High	Jan-Dec	---	---	---	---	None	---	None
30A:										
Holly	D	Negligible	Jan-April	0.0-1.0	>6.0	0.5-1.0	Brief	Occasional	Very brief	Occasional
			May	0.0-1.0	>6.0	0.3-1.0	Brief	Occasional	Very brief	Occasional
			June	0.0-1.0	>6.0	0.3-1.0	Very brief	Occasional	Very brief	Rare
			July-Oct	1.0-6.6	>6.0	0.3-1.0	Very brief	Occasional	Very brief	Rare
			Nov-Dec	0.0-1.0	>6.0	0.3-1.0	Brief	Occasional	Very brief	Occasional
31D:										
Kaymine	C	High	Jan-Dec	---	---	---	---	None	---	None
32E:										
Kaymine	C	High	Jan-Dec	---	---	---	---	None	---	None
Cedarcreek	C	High	Jan-Dec	---	---	---	---	None	---	None
33F:										
Kaymine	C	High	Jan-Dec	---	---	---	---	None	---	None
Fiveblock	C	Medium	Jan-Dec	---	---	---	---	None	---	None
34C:										
Kaymine	C	Medium	Jan-Dec	---	---	---	---	None	---	None
Fiveblock	C	Low	Jan-Dec	---	---	---	---	None	---	None
Cedarcreek	C	Medium	Jan-Dec	---	---	---	---	None	---	None
35C:										
Lily	B	High	Jan-Dec	---	---	---	---	None	---	None
35D:										
Lily	B	Very high	Jan-Dec	---	---	---	---	None	---	None
35E:										
Lily	B	Very high	Jan-Dec	---	---	---	---	None	---	None
36A:										
Lobdell	B	Low	Jan-May	2.0-3.5	>6.0	---	---	None	Very brief	Occasional
			June	3.5-6.6	>6.0	---	---	None	Very brief	Rare
			July-Sept	---	---	---	---	None	Very brief	Rare
			October	3.5-6.6	>6.0	---	---	None	Very brief	Rare
			Nov-Dec	2.0-3.5	>6.0	---	---	None	Very brief	Occasional

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
36A:										
Orrville	C	Very high	Jan-May	1.0-2.5	>6.0	---	---	None	Very brief	Occasional
			June	1.0-2.5	>6.0	---	---	None	Very brief	Rare
			July-Oct	2.5-6.6	>6.0	---	---	None	Very brief	Rare
			Nov-Dec	1.0-2.5	>6.0	---	---	None	Very brief	Occasional
37D:										
Mandy	C	Very high	Jan-Dec	---	---	---	---	None	---	None
Paddyknob	C	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										
38D:										
Marrowbone	C	High	Jan-Dec	---	---	---	---	None	---	None
38E:										
Marrowbone	C	High	Jan-Dec	---	---	---	---	None	---	None
38F:										
Marrowbone	C	High	Jan-Dec	---	---	---	---	None	---	None
39D:										
Marrowbone	C	High	Jan-Dec	---	---	---	---	None	---	None
Gilpin	C	High	Jan-Dec	---	---	---	---	None	---	None
39E:										
Marrowbone	C	High	Jan-Dec	---	---	---	---	None	---	None
Gilpin	C	High	Jan-Dec	---	---	---	---	None	---	None
39F:										
Marrowbone	C	High	Jan-Dec	---	---	---	---	None	---	None
Gilpin	C	High	Jan-Dec	---	---	---	---	None	---	None
40F:										
Matewan	B	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										
41A:										
Ogles	B	Very low	Jan-April	3.5-6.0	>6.0	---	---	None	Very brief	Occasional
			May	6.0-6.6	>6.0	---	---	None	Very brief	Occasional
			June-Sept	---	---	---	---	None	Very brief	Rare
			October	6.0-6.6	>6.0	---	---	None	Very brief	Rare
			Nov-Dec	3.5-6.0	>6.0	---	---	None	Very brief	Occasional

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
42C:										
Oriskany	B	Low	Jan-Dec	---	---	---	---	None	---	None
42D:										
Oriskany	B	Medium	Jan-Dec	---	---	---	---	None	---	None
42E:										
Oriskany	B	Medium	Jan-Dec	---	---	---	---	None	---	None
43.										
Pits, quarry										
44C:										
Poplimento	C	Medium	Jan-Dec	---	---	---	---	None	---	None
Westmoreland	B	Medium	Jan-Dec	---	---	---	---	None	---	None
45F:										
Ramsey	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										
46F:										
Rock outcrop.										
Beech Grove	C	Very high	Jan-Dec	---	---	---	---	None	---	None
Benthole	B	High	Jan-Dec	---	---	---	---	None	---	None
47F:										
Sewell	C	Medium	Jan-Dec	---	---	---	---	None	---	None
Kaymine	C	High	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										
48E:										
Shelocta	B	High	Jan-Dec	---	---	---	---	None	---	None
Cedarcreek	C	High	Jan-Dec	---	---	---	---	None	---	None
49E:										
Shelocta	B	High	Jan-Dec	---	---	---	---	None	---	None
Highsplint	B	High	Jan-Dec	---	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
50F:										
Shelocta------------------	B	High	Jan-Dec	---	---	---	---	None	---	None
Kaymine-------------------	C	High	Jan-Dec	---	---	---	---	None	---	None
51F:										
Stonecoal-----------------	C	Medium	Jan-Dec	---	---	---	---	None	---	None
52C:										
Tumbling------------------	B	Medium	Jan-Dec	---	---	---	---	None	---	None
52D:										
Tumbling------------------	B	High	Jan-Dec	---	---	---	---	None	---	None
53E:										
Tumbling------------------	B	High	Jan-Dec	---	---	---	---	None	---	None
54F.										
Udorthents-Urban land										
55D:										
Wallen--------------------	B	Very high	Jan-Dec	---	---	---	---	None	---	None
55F:										
Wallen--------------------	B	Very high	Jan-Dec	---	---	---	---	None	---	None
56D:										
Wallen--------------------	B	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										
56F:										
Wallen--------------------	B	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										
57C:										
Watahala------------------	B	Medium	Jan-Dec	---	---	---	---	None	---	None
57D:										
Watahala------------------	B	High	Jan-Dec	---	---	---	---	None	---	None
57E:										
Watahala------------------	B	High	Jan-Dec	---	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
57F:										
Watahala	B	High	Jan-Dec	---	---	---	---	None	---	None
58D:										
Watahala	B	High	Jan-Dec	---	---	---	---	None	---	None
58E:										
Watahala	B	High	Jan-Dec	---	---	---	---	None	---	None
59D:										
Wharton	C	Very high	Jan-March	1.5-3.0	3.3-6.0	---	---	None	---	None
			April	3.0-3.3	3.3-6.0	---	---	None	---	None
			May-Sept	---	---	---	---	None	---	None
			October	3.0-3.3	3.3-6.0	---	---	None	---	None
			Nov-Dec	1.5-3.0	3.3-6.0	---	---	None	---	None
Gilpin	C	High	Jan-Dec	---	---	---	---	None	---	None
Berks	C	High	Jan-Dec	---	---	---	---	None	---	None
60C:										
Wharton	C	Very high	Jan-March	1.5-3.0	3.3-6.0	---	---	None	---	None
			April	3.0-3.3	3.3-6.0	---	---	None	---	None
			May-Sept	---	---	---	---	None	---	None
			October	3.0-3.3	3.3-6.0	---	---	None	---	None
			Nov-Dec	1.5-3.0	3.3-6.0	---	---	None	---	None
Gilpin	C	Medium	Jan-Dec	---	---	---	---	None	---	None
Marrowbone	C	Medium	Jan-Dec	---	---	---	---	None	---	None
61B:										
Wyrick	B	Medium	Jan-Dec	---	---	---	---	None	---	None
Marbie	C	High	Jan-April	2.0-4.0	4.0-5.0	---	---	None	---	None
			May-Oct	---	---	---	---	None	---	None
			Nov-Dec	2.0-4.0	4.0-5.0	---	---	None	---	None
61C:										
Wyrick	B	Medium	Jan-Dec	---	---	---	---	None	---	None
Marbie	C	High	Jan-April	2.0-4.0	4.0-5.0	---	---	None	---	None
			May-Oct	---	---	---	---	None	---	None
			Nov-Dec	2.0-4.0	4.0-5.0	---	---	None	---	None
W.										
Water										

Table 19.—Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Restrictive layer			Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness		Uncoated steel	Concrete
		In				
1E:						
Berks	Bedrock (lithic)	20-40	Very strongly cemented	Moderate	Low	High
Chiswell	Bedrock (paralithic)	10-20	Moderately cemented	Moderate	Moderate	Moderate
1F:						
Berks	Bedrock (lithic)	20-40	Very strongly cemented	Moderate	Low	High
Chiswell	Bedrock (paralithic)	10-20	Moderately cemented	Moderate	Moderate	Moderate
2D:						
Berks	Bedrock (lithic)	20-40	Very strongly cemented	Moderate	Low	High
Gilpin	Bedrock (paralithic)	20-40	Moderately cemented	Moderate	Low	High
2E:						
Berks	Bedrock (lithic)	20-40	Very strongly cemented	Moderate	Low	High
Gilpin	Bedrock (paralithic)	20-40	Moderately cemented	Moderate	Low	High
2F:						
Berks	Bedrock (lithic)	20-40	Very strongly cemented	Moderate	Low	High
Gilpin	Bedrock (paralithic)	20-40	Moderately cemented	Moderate	Low	High
3C:						
Berks	Bedrock (lithic)	20-40	Very strongly cemented	Moderate	Low	High
Groseclose	---	---	---	Moderate	High	High
3D:						
Berks	Bedrock (lithic)	20-40	Very strongly cemented	Moderate	Low	High
Groseclose	---	---	---	Moderate	High	High
4D:						
Berks	Bedrock (lithic)	20-40	Very strongly cemented	Moderate	Low	High
Poplimento	---	---	---	Moderate	High	Moderate

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer			Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness		Uncoated steel	Concrete
		In				
5C:						
Berks	Bedrock (lithic)	20-40	Very strongly cemented	Moderate	Low	High
Weikert	Bedrock (lithic)	10-20	Very strongly cemented	Moderate	Moderate	Moderate
5D:						
Berks	Bedrock (lithic)	20-40	Very strongly cemented	Moderate	Low	High
Weikert	Bedrock (lithic)	10-20	Very strongly cemented	Moderate	Moderate	Moderate
5E:						
Berks	Bedrock (lithic)	20-40	Very strongly cemented	Moderate	Low	High
Weikert	Bedrock (lithic)	10-20	Very strongly cemented	Moderate	Moderate	Moderate
5F:						
Berks	Bedrock (lithic)	20-40	Very strongly cemented	Moderate	Low	High
Weikert	Bedrock (lithic)	10-20	Very strongly cemented	Moderate	Moderate	Moderate
6E:						
Berks	Bedrock (lithic)	20-40	Very strongly cemented	Moderate	Low	High
Westmoreland	Bedrock (lithic)	40-60	Very strongly cemented	Moderate	Low	High
6F:						
Berks	Bedrock (lithic)	20-40	Very strongly cemented	Moderate	Low	High
Westmoreland	Bedrock (lithic)	40-60	Very strongly cemented	Moderate	Low	High
7E:						
Bland	Bedrock (lithic)	20-40	Indurated	Moderate	High	Moderate
8D:						
Bland	Bedrock (lithic)	20-40	Indurated	Moderate	High	Moderate
Rock outcrop.						
8E:						
Bland	Bedrock (lithic)	20-40	Indurated	Moderate	High	Moderate
Rock outcrop.						
9D:						
Bland	Bedrock (lithic)	20-40	Indurated	Moderate	High	Moderate
Rock outcrop.						

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer			Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness		Uncoated steel	Concrete
		In				
10D:						
Calvin------------	Bedrock (lithic)	20-40	Indurated	Moderate	Low	Moderate
11F:						
Calvin------------	Bedrock (lithic)	20-40	Indurated	Moderate	Low	Moderate
Rough-------------	Bedrock (lithic)	4-10	Indurated	Moderate	High	High
12C:						
Carbo-------------	Bedrock (lithic)	20-40	Indurated	Moderate	High	Low
Beech Grove-------	Bedrock (lithic)	1-8	Indurated	Moderate	Moderate	Low
12D:						
Carbo-------------	Bedrock (lithic)	20-40	Indurated	Moderate	High	Low
Beech Grove-------	Bedrock (lithic)	1-8	Indurated	Moderate	Moderate	Low
12E:						
Carbo-------------	Bedrock (lithic)	20-40	Indurated	Moderate	High	Low
Beech Grove-------	Bedrock (lithic)	1-8	Indurated	Moderate	Moderate	Low
12F:						
Carbo-------------	Bedrock (lithic)	20-40	Indurated	Moderate	High	Low
Beech Grove-------	Bedrock (lithic)	1-8	Indurated	Moderate	Moderate	Low
13C:						
Carbo-------------	Bedrock (lithic)	20-40	Indurated	Moderate	High	Low
Frederick---------	---	---	---	Moderate	Moderate	High
Urban land.						
14D:						
Carbo-------------	Bedrock (lithic)	20-40	Indurated	Moderate	High	Low
Rock outcrop.						
14E:						
Carbo-------------	Bedrock (lithic)	20-40	Indurated	Moderate	High	Low
Rock outcrop.						
15D:						
Carbo-------------	Bedrock (lithic)	20-40	Indurated	Moderate	High	Low
Rock outcrop.						
16C:						
Cedarcreek--------	---	---	---	Moderate	Moderate	High
Sewell------------	---	---	---	Moderate	Moderate	High
17A:						
Chagrin-----------	---	---	---	Moderate	Low	Moderate
18.						
Dumps, mine-Urban land						

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Hardness	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In				
19C:						
Frederick---------	---	---	---	Moderate	Moderate	High
19D:						
Frederick---------	---	---	---	Moderate	Moderate	High
19E:						
Frederick---------	---	---	---	Moderate	Moderate	High
19F:						
Frederick---------	---	---	---	Moderate	Moderate	High
20C:						
Frederick---------	---	---	---	Moderate	Moderate	High
20D:						
Frederick---------	---	---	---	Moderate	Moderate	High
21C:						
Frederick---------	---	---	---	Moderate	Moderate	High
21D:						
Frederick---------	---	---	---	Moderate	Moderate	High
21E:						
Frederick---------	---	---	---	Moderate	Moderate	High
21F:						
Frederick---------	---	---	---	Moderate	Moderate	High
22C:						
Frederick---------	---	---	---	Moderate	Moderate	High
22D:						
Frederick---------	---	---	---	Moderate	Moderate	High
23D:						
Gilpin------------	Bedrock (paralithic)	20-40	Moderately cemented	Moderate	Low	High
24D:						
Gilpin------------	Bedrock (paralithic)	20-40	Moderately cemented	Moderate	Low	High
	Bedrock (lithic)	20-40	Very strongly cemented			
Berks-------------	Bedrock (paralithic)	20-40	Moderately cemented	Moderate	Low	High
	Bedrock (lithic)	20-40	Very strongly cemented			
24F:						
Gilpin------------	Bedrock (paralithic)	20-40	Moderately cemented	Moderate	Low	High
	Bedrock (lithic)	20-40	Very strongly cemented			
Berks-------------	Bedrock (paralithic)	20-40	Moderately cemented	Moderate	Low	High
	Bedrock (lithic)	20-40	Very strongly cemented			

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Hardness	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In				
25E:						
Gilpin------------	Bedrock (paralithic)	20-40	Moderately cemented	Moderate	Low	High
Shelocta----------	---	---	---	Moderate	Low	High
26F:						
Gilpin------------	Bedrock (paralithic)	20-40	Moderately cemented	Moderate	Low	High
Shelocta----------	---	---	---	Moderate	Low	High
27A:						
Grigsby-----------	---	---	---	None	Low	Low
28C:						
Highsplint--------	---	---	---	Moderate	Low	High
28D:						
Highsplint--------	---	---	---	Moderate	Low	High
29F:						
Highsplint--------	---	---	---	Moderate	Low	High
Shelocta----------	---	---	---	Moderate	Low	High
30A:						
Holly-------------	---	---	---	High	High	Moderate
31D:						
Kaymine-----------	---	---	---	Moderate	Low	Low
32E:						
Kaymine-----------	---	---	---	Moderate	Low	Low
Cedarcreek--------	---	---	---	Moderate	Moderate	High
33F:						
Kaymine-----------	---	---	---	Moderate	Low	Low
Fiveblock---------	---	---	---	Moderate	Low	Low
34C:						
Kaymine-----------	---	---	---	Moderate	Low	Low
Fiveblock---------	---	---	---	Moderate	Low	Low
Cedarcreek--------	---	---	---	Moderate	Moderate	High
35C:						
Lily--------------	Bedrock (lithic)	20-40	Indurated	Moderate	Moderate	High
35D:						
Lily--------------	Bedrock (lithic)	20-40	Indurated	Moderate	Moderate	High
35E:						
Lily--------------	Bedrock (lithic)	20-40	Indurated	Moderate	Moderate	High

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer			Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness		Uncoated steel	Concrete
		In				
36A:						
Lobdell	---	---	---	High	Low	Moderate
Orrville	---	---	---	High	High	Moderate
37D:						
Mandy	Bedrock (paralithic)	20-40	Strongly cemented	Moderate	Low	High
Paddyknob	Bedrock (lithic)	20-40	Indurated	Moderate	Low	High
Rock outcrop.						
38D:						
Marrowbone	Bedrock (paralithic)	20-40	Moderately cemented	Low	Low	Moderate
	Bedrock (lithic)	20-50	Indurated			
38E:						
Marrowbone	Bedrock (paralithic)	20-40	Moderately cemented	Low	Low	Moderate
	Bedrock (lithic)	20-50	Indurated			
38F:						
Marrowbone	Bedrock (paralithic)	20-40	Moderately cemented	Low	Low	Moderate
	Bedrock (lithic)	20-50	Indurated			
39D:						
Marrowbone	Bedrock (paralithic)	20-40	Moderately cemented	Low	Low	Moderate
	Bedrock (lithic)	20-50	Indurated			
Gilpin	Bedrock (paralithic)	20-40	Moderately cemented	Moderate	Low	High
	Bedrock (lithic)	20-40	Very strongly cemented			
39E:						
Marrowbone	Bedrock (paralithic)	20-40	Moderately cemented	Low	Low	Moderate
	Bedrock (lithic)	20-50	Indurated			
Gilpin	Bedrock (paralithic)	20-40	Moderately cemented	Moderate	Low	High
	Bedrock (lithic)	20-40	Very strongly cemented			
39F:						
Marrowbone	Bedrock (paralithic)	20-40	Moderately cemented	Low	Low	Moderate
	Bedrock (lithic)	20-50	Indurated			
Gilpin	Bedrock (paralithic)	20-40	Moderately cemented	Moderate	Low	High
	Bedrock (lithic)	20-40	Very strongly cemented			

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer			Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness		Uncoated steel	Concrete
		In				
40F:						
Matewan-----------	Bedrock (lithic)	20-40	Indurated	Low	Low	High
Rock outcrop.						
41A:						
Ogles-------------	---	---	---	Moderate	Low	Moderate
42C:						
Oriskany----------	---	---	---	Moderate	Moderate	High
42D:						
Oriskany----------	---	---	---	Moderate	Moderate	High
42E:						
Oriskany----------	---	---	---	Moderate	Moderate	High
43.						
Pits, quarry						
44C:						
Poplimento--------	---	---	---	Moderate	High	Moderate
Westmoreland------	Bedrock (lithic)	40-60	Very strongly cemented	Moderate	Low	High
45F:						
Ramsey------------	Bedrock (lithic)	10-20	Indurated	Moderate	Low	Moderate
Rock outcrop.						
46F:						
Rock outcrop.						
Beech Grove-------	Bedrock (lithic)	1-8	Indurated	Moderate	Moderate	Low
Benthole----------	---	---	---	Moderate	Moderate	Low
47F:						
Sewell------------	---	---	---	Moderate	Moderate	High
Kaymine-----------	---	---	---	Moderate	Low	Low
Rock outcrop.						
48E:						
Shelocta----------	---	---	---	Moderate	Low	High
Cedarcreek--------	---	---	---	Moderate	Moderate	High
49E:						
Shelocta----------	---	---	---	Moderate	Low	High
Highsplint--------	---	---	---	Moderate	Low	High
50F:						
Shelocta----------	---	---	---	Moderate	Low	High
Kaymine-----------	---	---	---	Moderate	Low	Low

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer			Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness		Uncoated steel	Concrete
		In				
51F:						
Stonecoal----------	---	---	---	Moderate	High	High
52C:						
Tumbling----------	---	---	---	Moderate	Moderate	Moderate
52D:						
Tumbling----------	---	---	---	Moderate	Moderate	Moderate
53E:						
Tumbling----------	---	---	---	Moderate	Moderate	Moderate
54F. Udorthents-Urban land						
55D:						
Wallen------------	Bedrock (lithic)	20-40	Indurated	Low	Low	High
55F:						
Wallen------------	Bedrock (lithic)	20-40	Indurated	Low	Low	High
56D:						
Wallen------------	Bedrock (lithic)	20-40	Indurated	Low	Low	High
Rock outcrop.						
56F:						
Wallen------------	Bedrock (lithic)	20-40	Indurated	Low	Low	High
Rock outcrop.						
57C:						
Watahala----------	Strongly contrasting textural stratification	20-50	---	Moderate	High	High
57D:						
Watahala----------	Strongly contrasting textural stratification	20-50	---	Moderate	High	High
57E:						
Watahala----------	Strongly contrasting textural stratification	20-50	---	Moderate	High	High
57F:						
Watahala----------	Strongly contrasting textural stratification	20-50	---	Moderate	High	High
58D:						
Watahala----------	Strongly contrasting textural stratification	20-50	---	Moderate	High	High

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Hardness	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In				
58E:						
Watahala----------	Strongly contrasting textural stratification	20-50	---	Moderate	High	High
59D:						
Wharton-----------	Bedrock (lithic)	40-70	Very strongly cemented	High	High	High
Gilpin------------	Bedrock (paralithic)	20-40	Moderately cemented	Moderate	Low	High
	Bedrock (lithic)	20-40	Very strongly cemented			
Berks-------------	Bedrock (paralithic)	20-40	Moderately cemented	Moderate	Low	High
	Bedrock (lithic)	20-40	Very strongly cemented			
60C:						
Wharton-----------	Bedrock (lithic)	40-70	Very strongly cemented	High	High	High
Gilpin------------	Bedrock (paralithic)	20-40	Moderately cemented	Moderate	Low	High
	Bedrock (lithic)	20-40	Very strongly cemented			
Marrowbone--------	Bedrock (paralithic)	20-40	Moderately cemented	Low	Low	Moderate
	Bedrock (lithic)	20-50	Indurated			
61B:						
Wyrick------------	---	---	---	Moderate	Moderate	Moderate
Marbie------------	Fragipan	32-40	Weakly cemented	Moderate	Moderate	Moderate
61C:						
Wyrick------------	---	---	---	Moderate	Moderate	Moderate
Marbie------------	Fragipan	32-40	Weakly cemented	Moderate	Moderate	Moderate
W.						
Water						

Table 20.—Classification of the Soils

Soil name	Family or higher taxonomic class
Beech Grove	Loamy, mixed, superactive, nonacid, mesic Lithic Udorthents
Benthole	Loamy-skeletal, mixed, superactive, mesic Typic Hapludalfs
Berks	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
Bland	Fine, mixed, semiactive, mesic Typic Hapludalfs
Calvin	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
Carbo	Very fine, mixed, active, mesic Typic Hapludalfs
Cedarcreek	Loamy-skeletal, mixed, active, acid, mesic Typic Udorthents
Chagrin	Fine-loamy, mixed, active, mesic Dystric Fluventic Eutrudepts
Chiswell	Loamy-skeletal, mixed, active, mesic, shallow Typic Dystrudepts
Fiveblock	Loamy-skeletal, mixed, semiactive, nonacid, mesic Typic Udorthents
Frederick	Fine, mixed, semiactive, mesic Typic Paleudults
Gilpin	Fine-loamy, mixed, active, mesic Typic Hapludults
Grigsby	Coarse-loamy, mixed, active, mesic Dystric Fluventic Eutrudepts
Groseclose	Fine, mixed, semiactive, mesic Typic Hapludults
Highsplint	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
Holly	Fine-loamy, mixed, active, nonacid, mesic Fluvaquentic Endoaquepts
Kaymine	Loamy-skeletal, mixed, active, nonacid, mesic Typic Udorthents
Lily	Fine-loamy, siliceous, semiactive, mesic Typic Hapludults
Lobdell	Fine-loamy, mixed, active, mesic Fluvaquentic Eutrudepts
Mandy	Loamy-skeletal, mixed, active, frigid Typic Dystrudepts
Marbie	Fine-loamy, siliceous, semiactive, mesic Typic Fragiudults
Marrowbone	Coarse-loamy, mixed, semiactive, mesic Typic Dystrudepts
Matewan	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
Ogles	Loamy-skeletal, siliceous, active, mesic Fluventic Dystrudepts
Oriskany	Loamy-skeletal, siliceous, semiactive, mesic Typic Hapludults
Orrville	Fine-loamy, mixed, active, nonacid, mesic Fluventic Endoaquepts
Paddyknob	Loamy-skeletal, siliceous, superactive, frigid Typic Dystrudepts
Poplimento	Fine, mixed, subactive, mesic Ultic Hapludalfs
Ramsey	Loamy, siliceous, subactive, mesic Lithic Dystrudepts
Rough	Loamy, mixed, active, acid, mesic Lithic Udorthents
Sewell	Loamy-skeletal, mixed, semiactive, acid, mesic Typic Udorthents
Shelocta	Fine-loamy, mixed, active, mesic Typic Hapludults
Stonecoal	Loamy-skeletal, mixed, semiactive, nonacid, mesic Typic Udorthents
Tumbling	Fine, kaolinitic, mesic Typic Paleudults
Udorthents	Udorthents
Wallen	Loamy-skeletal, siliceous, active, mesic Typic Dystrudepts
Watahala	Fine-loamy over clayey, siliceous over mixed, subactive, mesic Typic Paleudults
Weikert	Loamy-skeletal, mixed, active, mesic Lithic Dystrudepts
Westmoreland	Fine-loamy, mixed, active, mesic Ultic Hapludalfs
Wharton	Fine-loamy, mixed, active, mesic Aquic Hapludults
Wyrick	Fine-loamy, siliceous, semiactive, mesic Typic Paleudults

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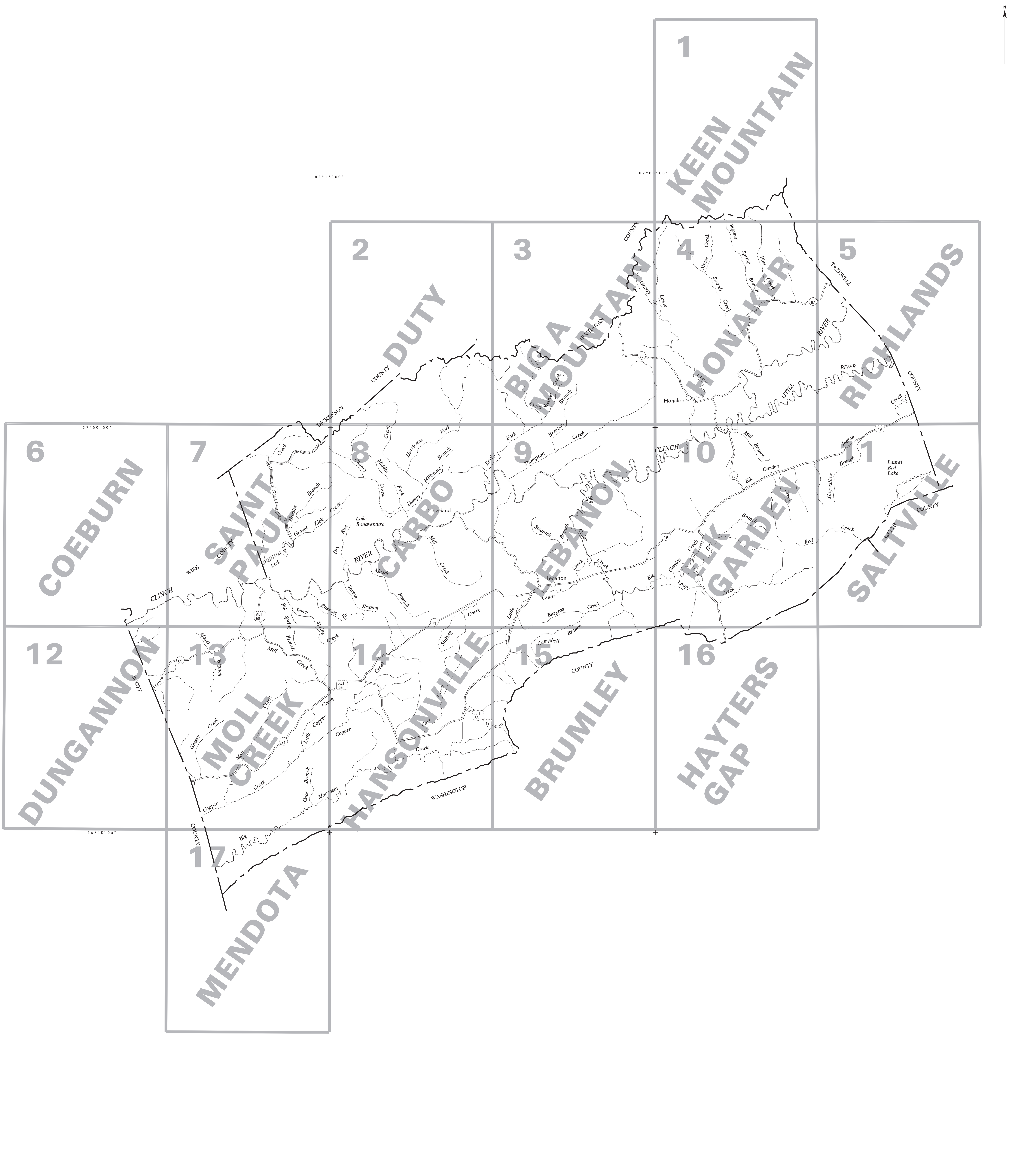

INDEX TO MAP SHEETS

RUSSELL COUNTY, VIRGINIA

MILES

KILOMETERS

SCALE = 1:135000

SOIL LEGEND

Map symbols consist of a combination of numbers and letters. The numbers are listed numerically and represent the kind of soil or soils in the map unit. A capital letter indicates the slope class. Symbols without a slope letter are for miscellaneous areas having a wide slope range as described in the map unit description.

SYMBOL	NAME
1E	Berks-Chiswell complex, 35 to 55 percent slopes
1F	Berks-Chiswell complex, 55 to 80 percent slopes
2D	Berks-Gilpin complex, 15 to 35 percent slopes
2E	Berks-Gilpin complex, 35 to 55 percent slopes
2F	Berks-Gilpin complex, 55 to 70 percent slopes
3C	Berks-Groseclose complex, 8 to 15 percent slopes
3D	Berks-Groseclose complex, 15 to 35 percent slopes
4D	Berks-Poplimento complex, 15 to 35 percent slopes
5C	Berks-Weikert channery silt loams, 8 to 15 percent slopes
5D	Berks-Weikert channery silt loams, 15 to 35 percent slopes
5E	Berks-Weikert channery silt loams, 35 to 55 percent slopes
5F	Berks-Weikert channery silt loams, 55 to 70 percent slopes
6E	Berks-Westmoreland complex, 35 to 55 percent slopes
6F	Berks-Westmoreland complex, 55 to 70 percent slopes
7E	Bland silty clay loam, 25 to 50 percent slopes, eroded
8D	Bland-Rock outcrop complex, 8 to 25 percent slopes, eroded
8E	Bland-Rock outcrop complex, 25 to 50 percent slopes, eroded
9D	Bland-Rock outcrop complex, karst, 8 to 35 percent slopes, eroded
10D	Calvin loam, 15 to 35 percent slopes
11F	Calvin-Rough complex, 35 to 80 percent slopes, very rocky
12C	Carbo-Beech Grove complex, 8 to 15 percent slopes, very rocky, eroded
12D	Carbo-Beech Grove complex, 15 to 25 percent slopes, very rocky, eroded
12E	Carbo-Beech Grove complex, 25 to 35 percent slopes, very rocky, eroded
12F	Carbo-Beech Grove complex, 35 to 65 percent slopes, very rocky, eroded
13C	Carbo-Frederick-Urban land complex, 0 to 15 percent slopes, eroded
14D	Carbo-Rock outcrop complex, 8 to 25 percent slopes, eroded
14E	Carbo-Rock outcrop complex, 25 to 65 percent slopes, eroded
15D	Carbo-Rock outcrop complex, karst, 8 to 35 percent slopes, eroded
16C	Cedarcreek-Sewell-Rock outcrop complex, 0 to 15 percent slopes, very stony
17A	Chagrin loam, 0 to 3 percent slopes, occasionally flooded
18	Dumps, mine-Urban land complex
19C	Frederick silt loam, 8 to 15 percent slopes, eroded
19D	Frederick silt loam, 15 to 25 percent slopes, eroded
19E	Frederick silt loam, 25 to 35 percent slopes, eroded
19F	Frederick silt loam, 35 to 60 percent slopes, eroded
20C	Frederick silt loam, karst, 8 to 15 percent slopes, eroded
20D	Frederick silt loam, karst, 15 to 25 percent slopes, eroded
21C	Frederick gravelly silt loam, 8 to 15 percent slopes, eroded
21D	Frederick gravelly silt loam, 15 to 25 percent slopes, eroded
21E	Frederick gravelly silt loam, 25 to 35 percent slopes, eroded
21F	Frederick gravelly silt loam, 35 to 60 percent slopes, eroded
22C	Frederick gravelly silt loam, karst, 8 to 15 percent slopes, eroded
22D	Frederick gravelly silt loam, karst, 15 to 25 percent slopes, eroded
23D	Gilpin silt loam, 15 to 35 percent slopes
24D	Gilpin-Berks complex, 25 to 35 percent slopes
24F	Gilpin-Berks complex, 35 to 70 percent slopes
25E	Gilpin-Shelocta silt loams, 35 to 55 percent slopes, very stony
26F	Gilpin-Shelocta silt loams, 55 to 70 percent slopes, rocky
27A	Grigsby sandy loam, 0 to 3 percent slopes, occasionally flooded
28C	Highsplint channery silt loam, 8 to 15 percent slopes, very stony
28D	Highsplint channery silt loam, 15 to 35 percent slopes, very stony

SYMBOL	NAME
29F	Highsplint-Shelocta complex, 55 to 80 percent slopes, very stony
30A	Holly loam, 0 to 3 percent slopes, occasionally flooded
31D	Kaymine very channery silt loam, 15 to 35 percent slopes, extremely stony
32E	Kaymine-Cedarcreek complex, 35 to 55 percent slopes, extremely stony
33F	Kaymine-Fiveblock complex, 55 to 80 percent slopes, extremely stony
34C	Kaymine-Fiveblock-Cedarcreek complex, 0 to 15 percent slopes, extremely stony
35C	Lily loam, 8 to 15 percent slopes
35D	Lily loam, 15 to 35 percent slopes
35E	Lily loam, 35 to 55 percent slopes
36A	Lobdell-Orrville complex, 0 to 3 percent slopes, occasionally flooded
37D	Mandy-Paddyknob-Rock outcrop complex, 8 to 35 percent slopes, very stony
38D	Marrowbone fine sandy loam, 15 to 35 percent slopes, very stony
38E	Marrowbone fine sandy loam, 35 to 55 percent slopes, very stony
38F	Marrowbone fine sandy loam, 55 to 70 percent slopes, very stony
39D	Marrowbone-Gilpin complex, 15 to 25 percent slopes
39E	Marrowbone-Gilpin complex, 25 to 35 percent slopes
39F	Marrowbone-Gilpin complex, 35 to 70 percent slopes
40F	Matewan-Rock outcrop complex, 55 to 80 percent slopes, extremely stony
41A	Ogles very stony loam, 0 to 3 percent slopes, occasionally flooded
42C	Oriskany very cobbly fine sandy loam, 8 to 15 percent slopes, extremely stony
42D	Oriskany very cobbly fine sandy loam, 15 to 35 percent slopes, extremely stony
42E	Oriskany very cobbly fine sandy loam, 35 to 55 percent slopes, extremely stony
43	Pits, quarry
44C	Poplimento-Westmoreland complex, 8 to 15 percent slopes
45F	Ramsey-Rock outcrop complex, 35 to 70 percent slopes
46F	Rock outcrop-Beech Grove-Benthole complex, 55 to 100 percent slopes, extremely bouldery
47F	Sewell-Kaymine-Rock outcrop complex, 0 to 80 percent slopes, extremely stony
48E	Shelocta-Cedarcreek complex, 35 to 55 percent slopes, very bouldery
49E	Shelocta-Highsplint complex, 35 to 55 percent slopes, very stony
50F	Shelocta-Kaymine complex, 55 to 80 percent slopes, very bouldery
51F	Stonecoal extremely channery sandy loam, 0 to 80 percent slopes
52C	Tumbling loam, 8 to 15 percent slopes
52D	Tumbling loam, 15 to 25 percent slopes
53E	Tumbling loam, 25 to 45 percent slopes, very stony
54F	Udorthents-Urban land complex, 0 to 80 percent slopes
55D	Wallen channery sandy loam, 15 to 35 percent slopes, very stony
55F	Wallen channery sandy loam, 35 to 70 percent slopes, very stony
56D	Wallen-Rock outcrop complex, 15 to 35 percent slopes, extremely stony
56F	Wallen-Rock outcrop complex, 35 to 80 percent slopes, extremely stony
57C	Watahala gravelly silt loam, 8 to 15 percent slopes
57D	Watahala gravelly silt loam, 15 to 25 percent slopes
57E	Watahala gravelly silt loam, 25 to 35 percent slopes
57F	Watahala gravelly silt loam, 35 to 55 percent slopes
58D	Watahala gravelly silt loam, 15 to 25 percent slopes, extremely stony
58E	Watahala gravelly silt loam, 25 to 35 percent slopes, extremely stony
59D	Wharton-Gilpin-Berks complex, 15 to 25 percent slopes
60C	Wharton-Gilpin-Marrowbone complex, 8 to 15 percent slopes
61B	Wyrick-Marbie silt loams, 3 to 8 percent slopes
61C	Wyrick-Marbie silt loams, 8 to 15 percent slopes
W	Water

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

National, state, or province

County or parish

TRANSPORTATION

Divided roads

Other roads

ROAD EMBLEM & DESIGNATIONS

Federal 287

State 52

HYDROGRAPHIC FEATURES

STREAMS

Unclassified

Drainage end

SPECIAL SYMBOLS FOR SOIL SURVEY AND SSURGO

SOIL DELINEATIONS AND SYMBOLS 1E 38E

MISCELLANEOUS SURFACE FEATURES

Bedrock

Miscellaneous water

Rock outcrop

Sinkhole

Wet spot

AD HOC FEATURES

Farm pond

Pond

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

RUSSELL COUNTY, VIRGINIA
KEEN MOUNTAIN QUADRANGLE
SHEET NUMBER 1 OF 17

Joins sheet 3, Big A Mountain

Joins sheet 4, Honaker

Joins sheet 5, Richlands

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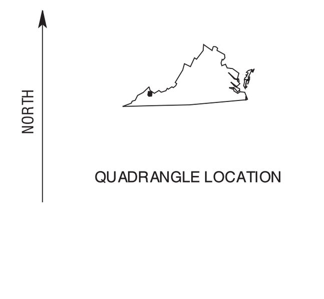
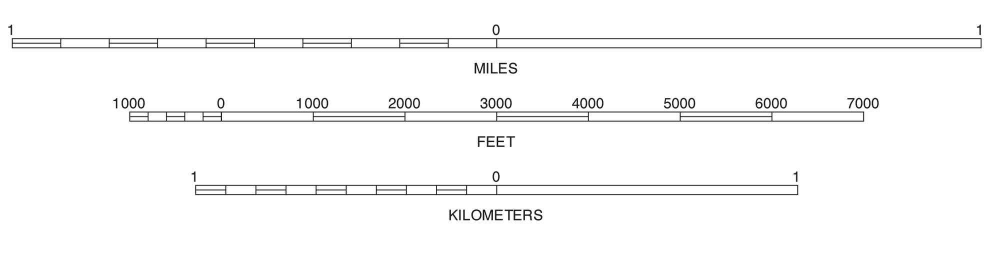
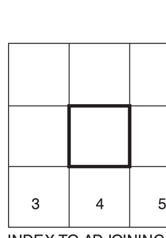
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION

SCALE 1:24000





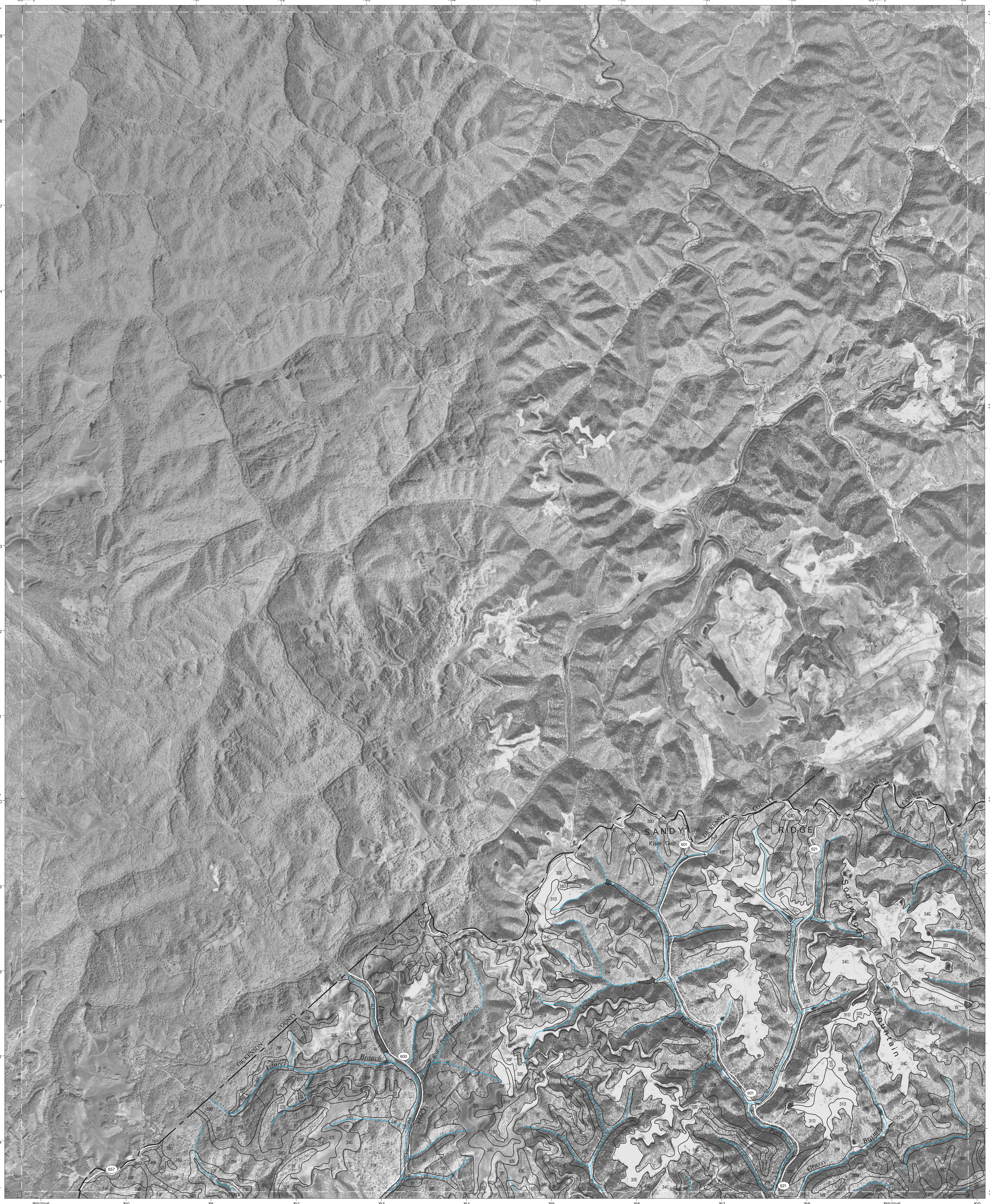
INDEX TO ADJOINING 7.5 MAPS

KEEN MOUNTAIN, VIRGINIA

7.5 MINUTE SERIES

SHEET NUMBER 1 OF 17

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



Joins sheet 7, Saint Paul

Joins sheet 8, Carbo

Joins sheet 9, Lebanon

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

	■	3
7	8	9

3 BIG A MOUNTAIN
7 SAINT PAUL
8 CARBO
9 LEBANON

INDEX TO ADJOINING 7.5 MAPS

DUTY, VIRGINIA

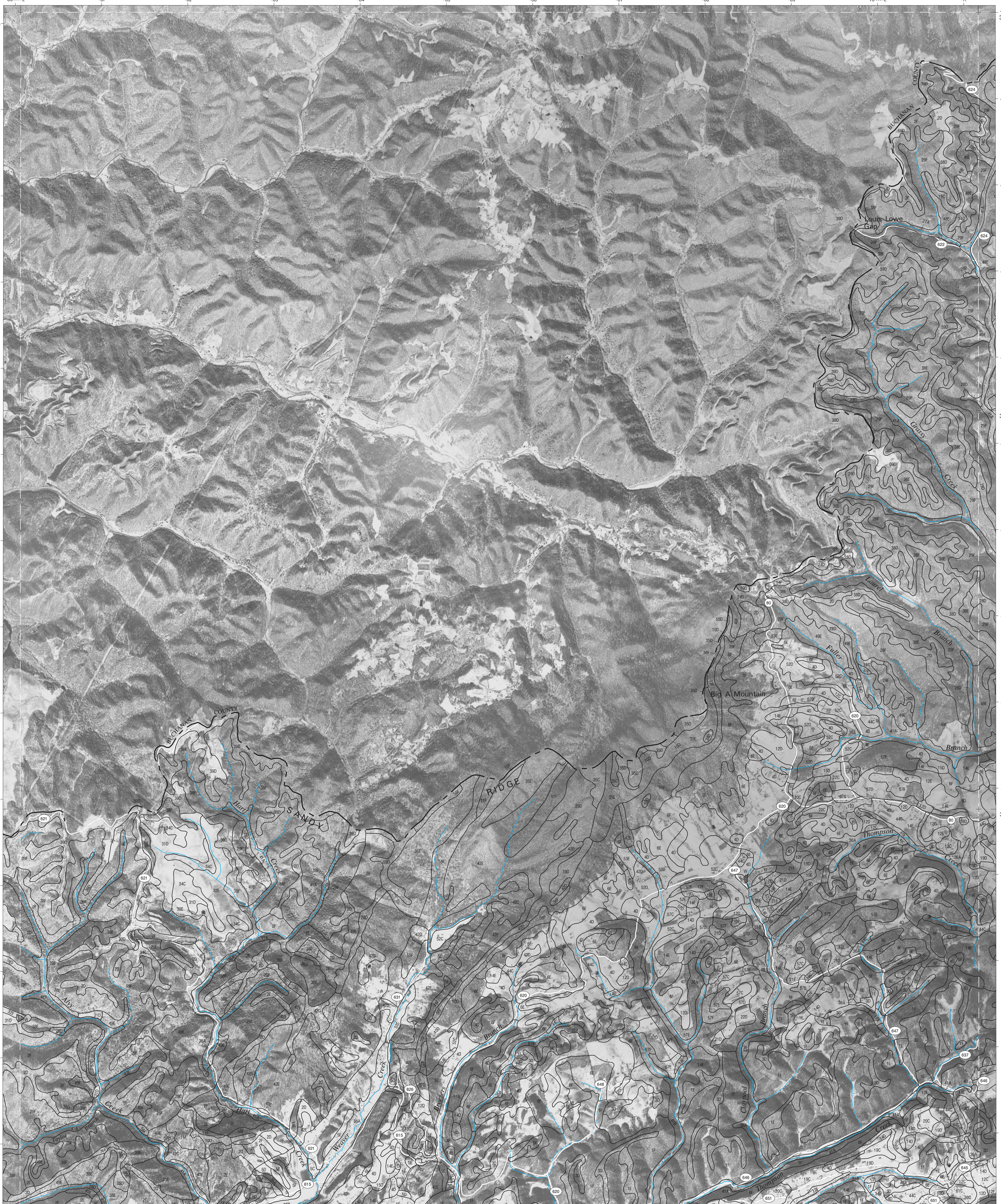
7.5 MINUTE SERIES
SHEET NUMBER 2 OF 17

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

RUSSELL COUNTY, VIRGINIA
BIG A MOUNTAIN QUADRANGLE
SHEET NUMBER 3 OF 17

Joins sheet 1, Keen Mountain



Joins sheet 2, Duty

Joins sheet 4, Honaker

Joins sheet 8, Carbo

Joins sheet 9, Lebanon

Joins sheet 10, Elk Garden

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

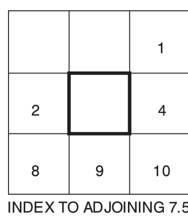
QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS



1 KEEN MOUNTAIN
2 DUTY
4 HONAKER
8 CARBO
9 LEBANON
10 ELK GARDEN

INDEX TO ADJOINING 7.5 MAPS

BIG A MOUNTAIN, VIRGINIA

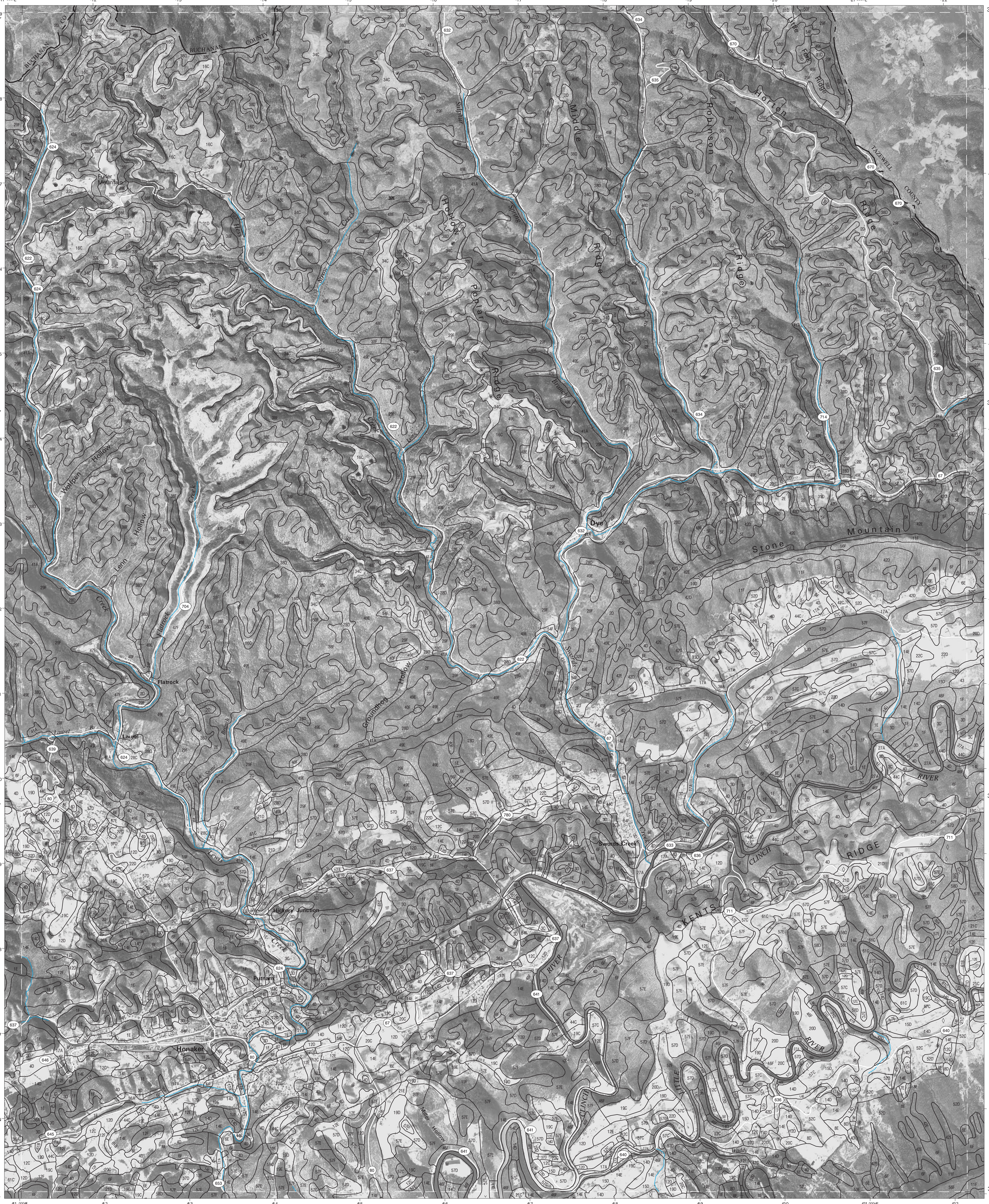
7.5 MINUTE SERIES
SHEET NUMBER 3 OF 17

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

RUSSELL COUNTY, VIRGINIA
HONAKER QUADRANGLE
SHEET NUMBER 4 OF 17

Joins sheet 1, Keen Mountain



Joins sheet 10, Elk Garden

Joins sheet 9, Lebanon

Joins sheet 11, Saltville

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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

	1		1 KEEN MOUNTAIN
3		5	3 BIG A MOUNTAIN 5 RICHLANDS
9	10	11	9 LEBANON 10 ELK GARDEN 11 SALTVILLE

INDEX TO ADJOINING 7.5 MAPS

HONAKER, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 4 OF 17

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

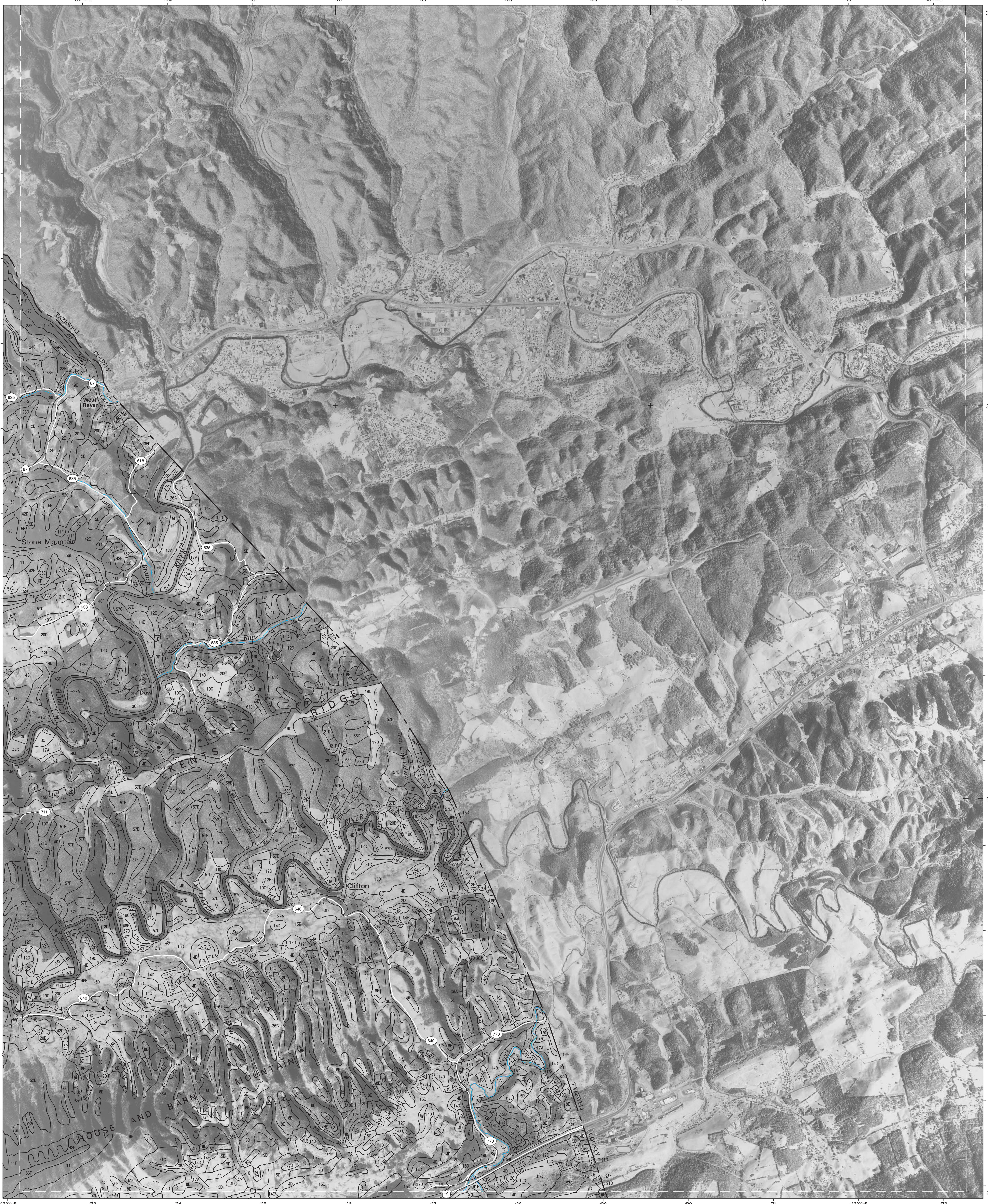
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

RUSSELL COUNTY, VIRGINIA
RICHLANDS QUADRANGLE
SHEET NUMBER 5 OF 17

Joins sheet 1, Keen Mountain

81° 52′30″ 81° 50′00″ 81° 47′30″ 81° 45′00″

37° 07′30″



37° 05′00″ 37° 02′30″ 37° 00′00″

Joins sheet 4, Honaker

81° 52′30″ 81° 50′00″ 81° 47′30″ 81° 45′00″

Joins sheet 11, Saltville

Joins sheet 10, Elk Garden

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

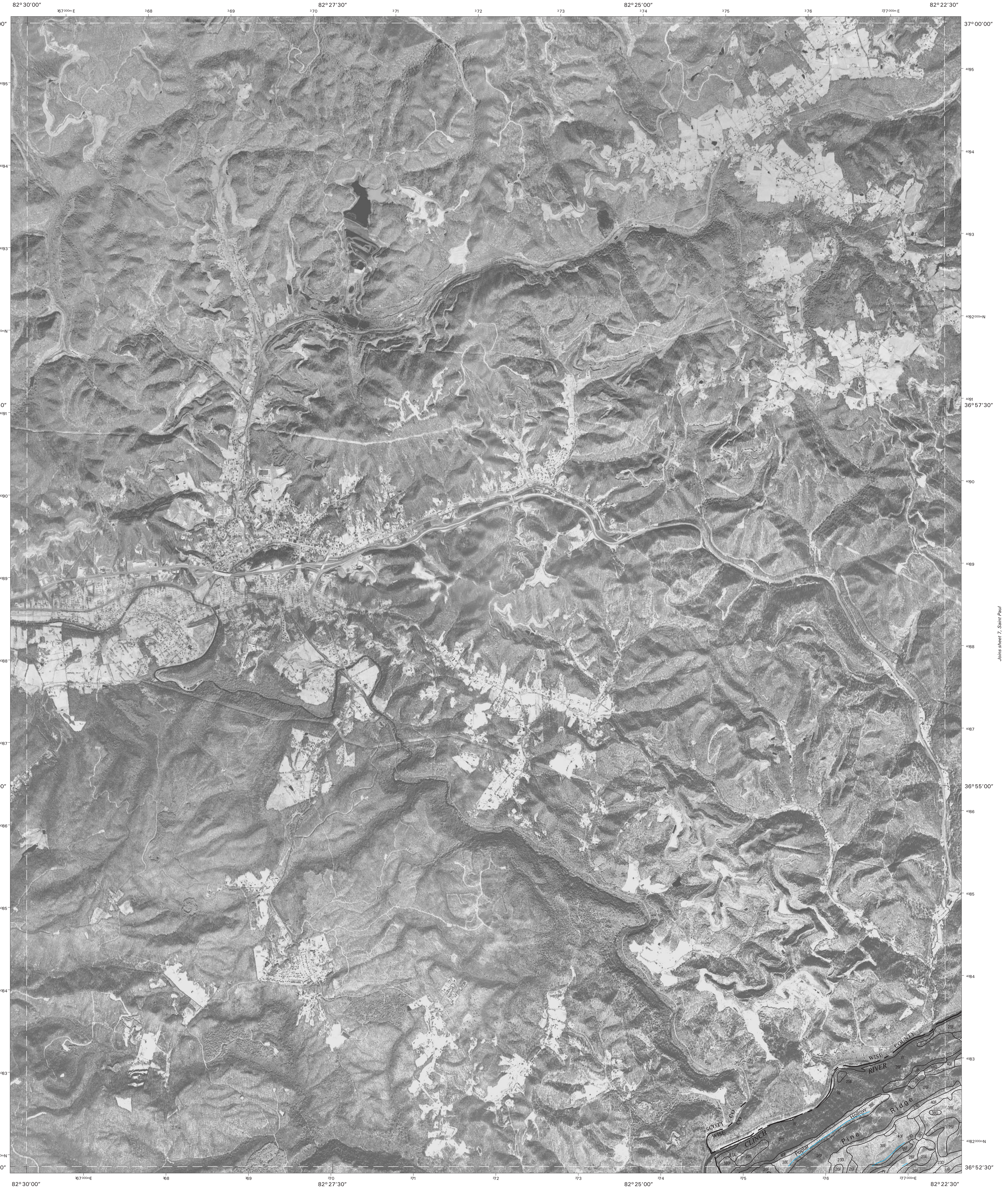
KILOMETERS

INDEX TO ADJOINING 7.5 MAPS

1 KEEN MOUNTAIN
4 HONAKER
10 ELK GARDEN
11 SALTVILLE

RICHLANDS, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 5 OF 17

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

7 SAINT PAUL
12 DUNGANNON
13 MOLL CREEK

INDEX TO ADJOINING 7.5 MAPS

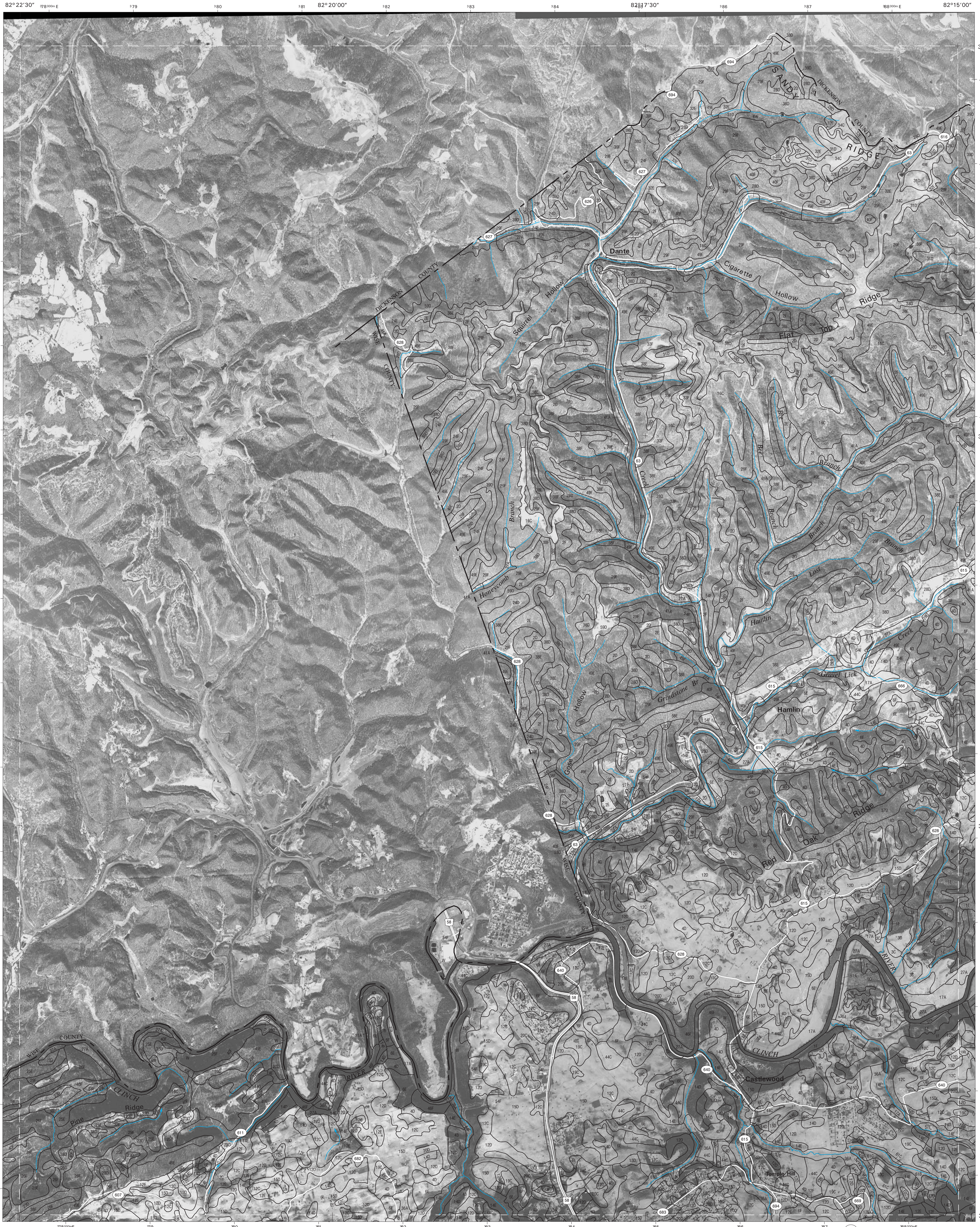
COEBURN, VIRGINIA

7.5 MINUTE SERIES
SHEET NUMBER 6 OF 17

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

RUSSELL COUNTY, VIRGINIA
SAINT PAUL QUADRANGLE (OVERSIZED)
SHEET NUMBER 7 OF 17



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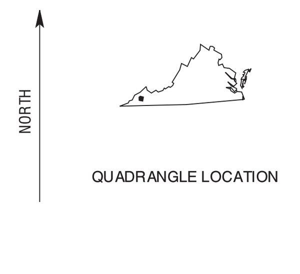
MILES

FEET

KILOMETERS

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1995-1999 aerial photography. Hydrography and culture information were acquired from Natural Resources Conservation Service. Hydrography and cultural layers were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION

		2
6		8
12	13	14

2 DUTY
6 COEBURN
8 CARBO
12 DUNGANNON
13 MOLL CREEK
14 HANSONVILLE

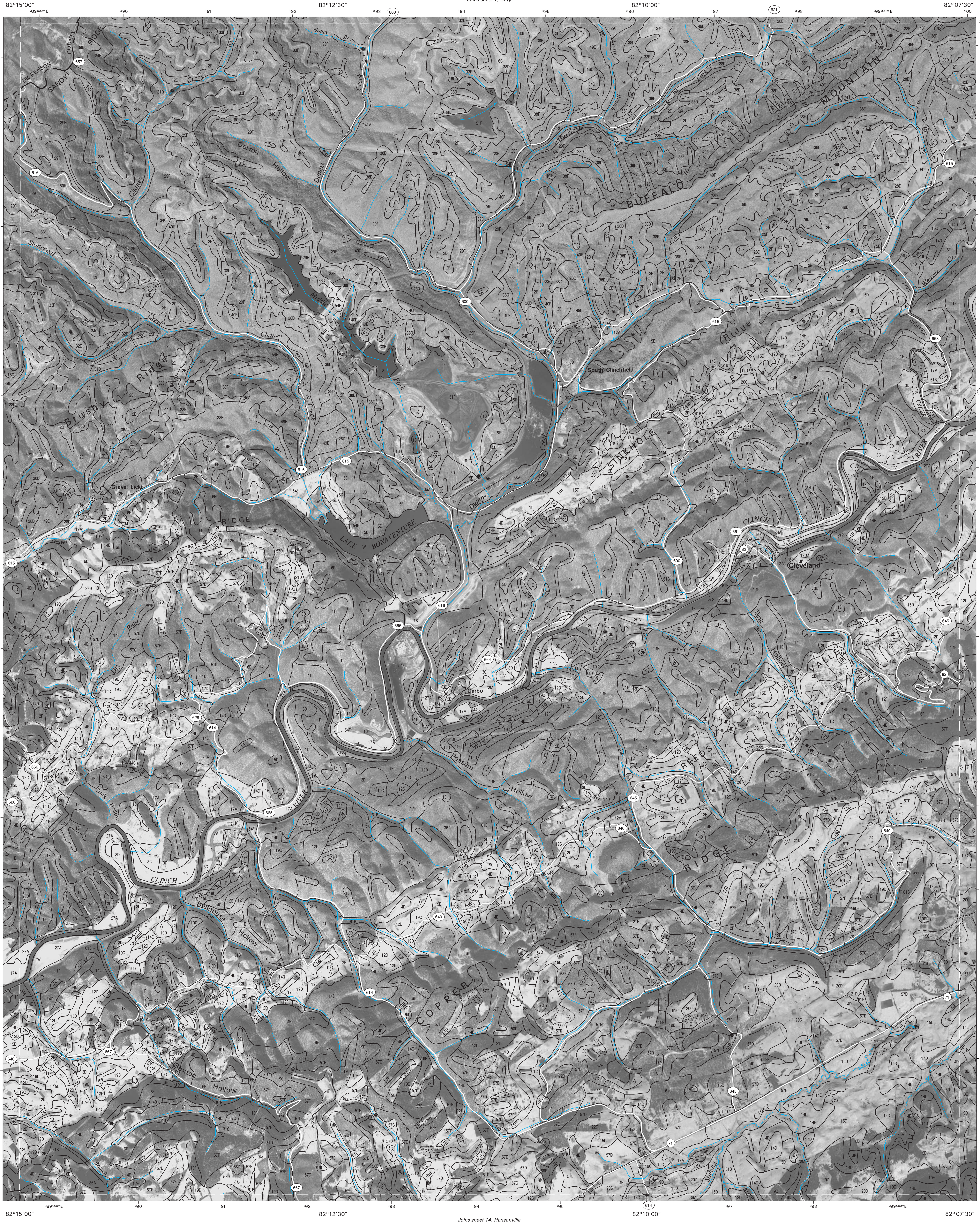
INDEX TO ADJOINING 7.5 MAPS

SAINT PAUL, (OVERSIZED) VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 7 OF 17

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

RUSSELL COUNTY, VIRGINIA
CARBO QUADRANGLE
SHEET NUMBER 8 OF 17



SCALE 1:24000

MILES

FEET

KILOMETERS

NORTH

QUADRANGLE LOCATION

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

	2	3
7		9
13	14	15

2 DUTY
3 BIG A MOUNTAIN
7 SAINT PAUL
9 LEBANON
13 MOLL CREEK
14 HANSONVILLE
15 BRUMLEY

INDEX TO ADJOINING 7.5 MAPS

CARBO, VIRGINIA

7.5 MINUTE SERIES
SHEET NUMBER 8 OF 17

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

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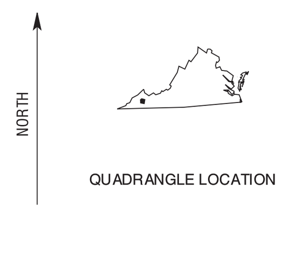
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



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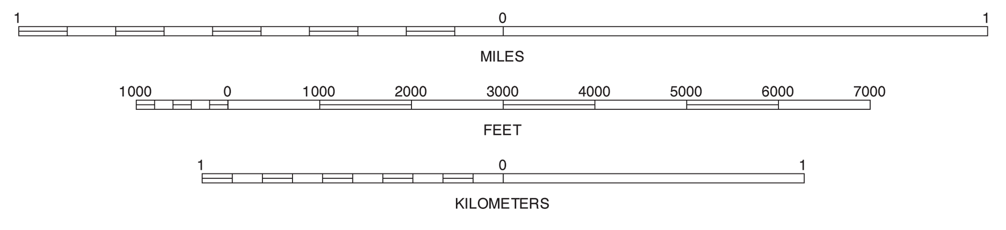


2	3	4
8		10
14	15	16

2 DUTY
3 BIG A MOUNTAIN
4 HONAKER
8 CARBO
10 ELK GARDEN
14 HANSONVILLE
15 BRUMLEY
16 HAYTERS GAP

INDEX TO ADJOINING 7.5 MAPS

LEBANON, VIRGINIA

7.5 MINUTE SERIES
SHEET NUMBER 9 OF 17

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

RUSSELL COUNTY, VIRGINIA
ELK GARDEN QUADRANGLE
SHEET NUMBER 10 OF 17

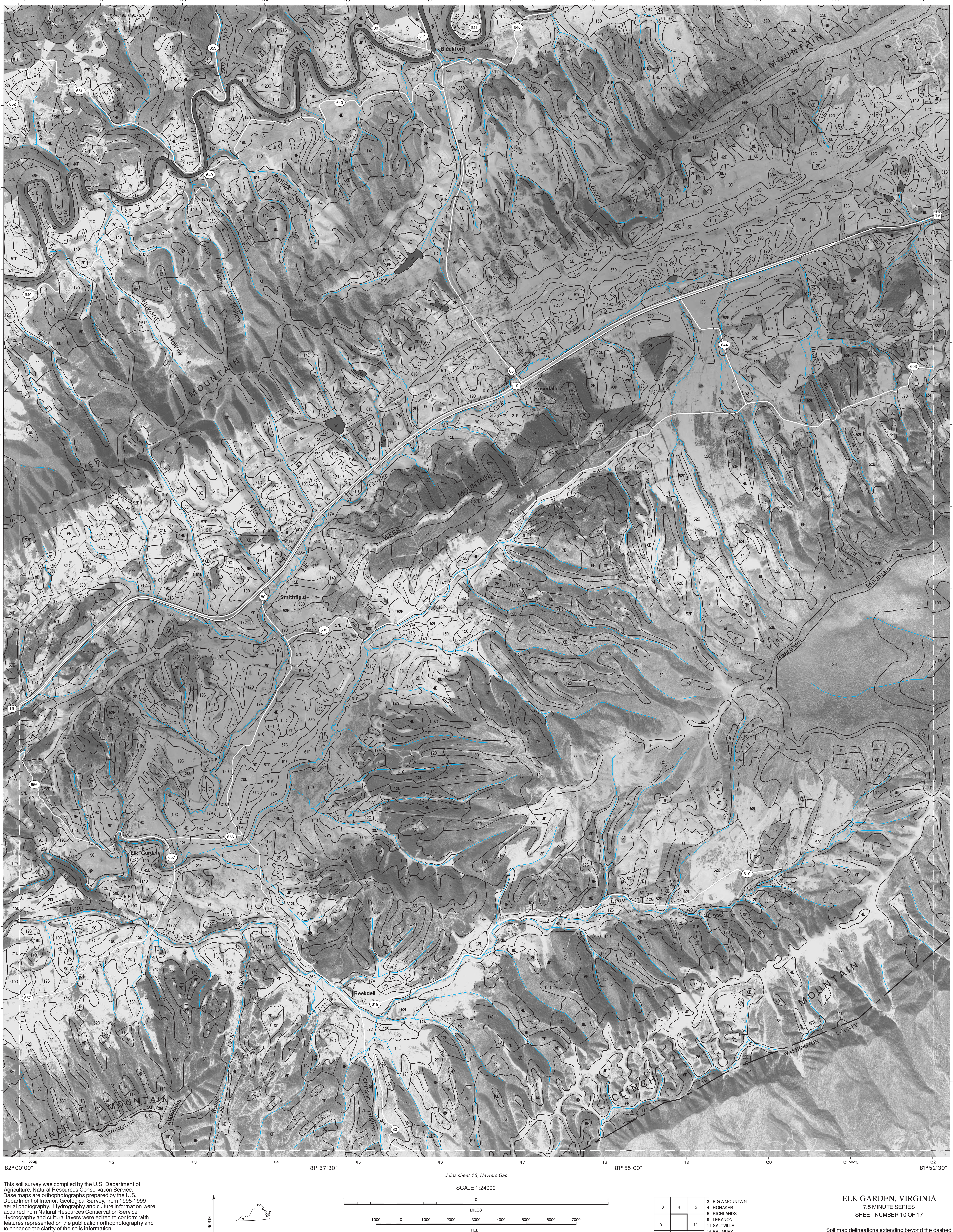
Joins sheet 3, Big A Mountain

Joins sheet 4, Honaker

Joins sheet 5, Richlands

82° 00'00" 81° 57'30" 81° 55'00" 81° 52'30"

37° 00'00"



36° 57'30"

36° 55'00"

36° 52'30"

Joins sheet 9, Lebanon

Joins sheet 11, Saltville

Joins sheet 15, Brumley

Joins sheet 16, Hayters Gap

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

3 BIG A MOUNTAIN
4 HONAKER
5 RICHLANDS
9 LEBANON
11 SALTVILLE
15 BRUMLEY
16 HAYTERS GAP

INDEX TO ADJOINING 7.5 MAPS

ELK GARDEN, VIRGINIA

7.5 MINUTE SERIES
SHEET NUMBER 10 OF 17

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

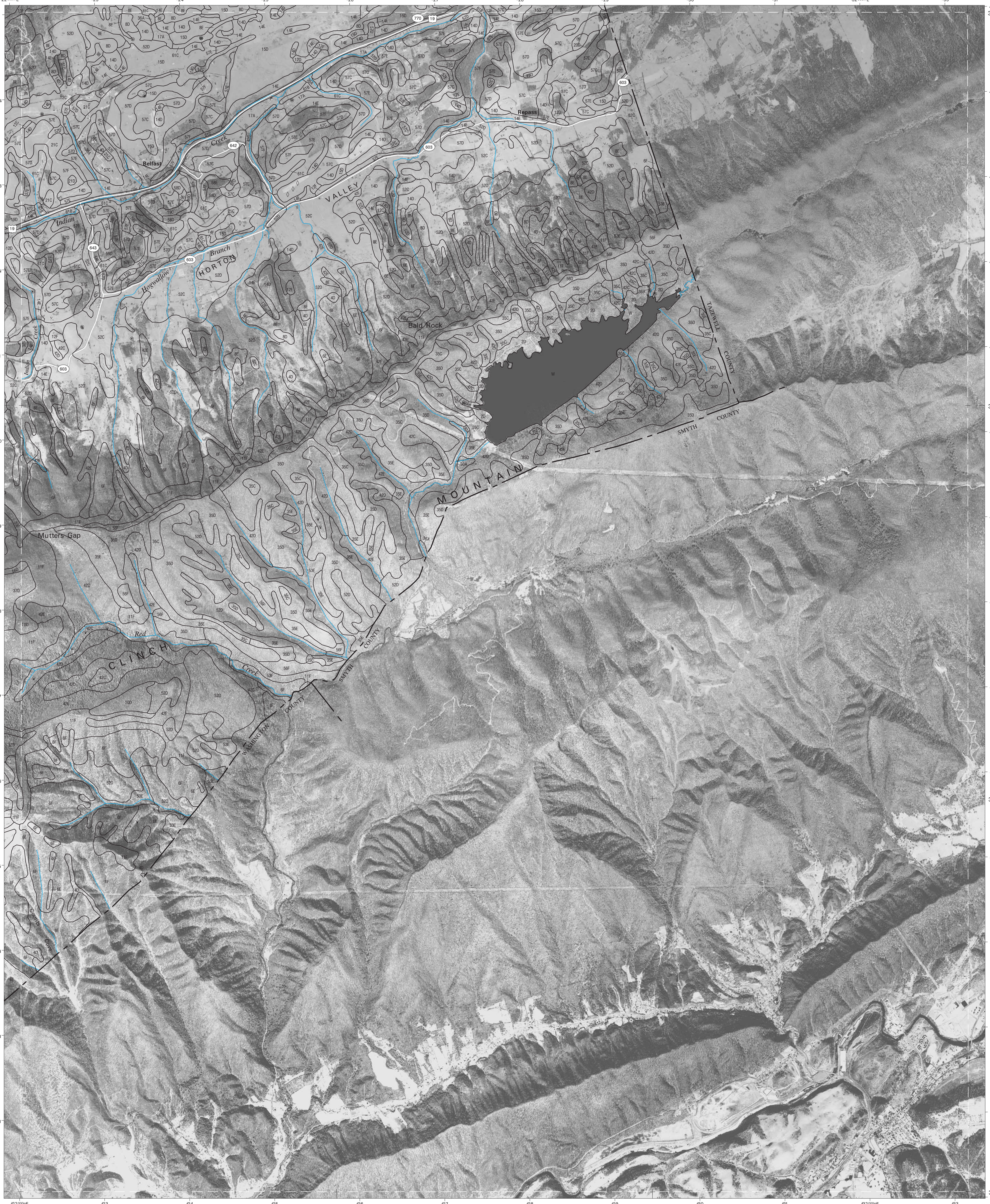
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

Joins sheet 4, Honaker

Joins sheet 5, Richlands

Joins sheet 10, Elk Garden

Joins sheet 16, Hayters Gap



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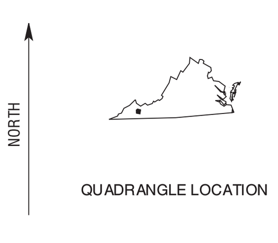
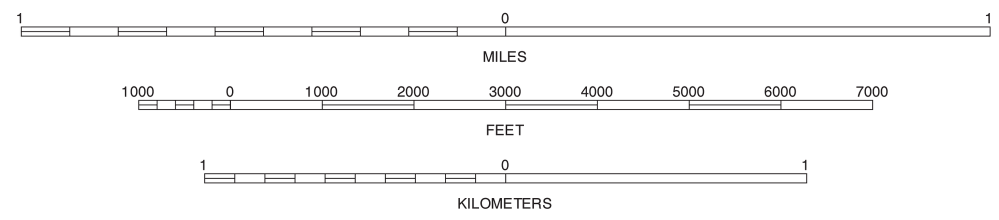
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION

SCALE 1:24000



4	5	
10		
16		

4 HONAKER
5 RICHLANDS
10 ELK GARDEN
16 HAYTERS GAP

INDEX TO ADJOINING 7.5 MAPS

SALTVILLE, VIRGINIA

7.5 MINUTE SERIES
SHEET NUMBER 11 OF 17

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

RUSSELL COUNTY, VIRGINIA
DUNGANNON QUADRANGLE
SHEET NUMBER 12 OF 17

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1995-1999 aerial photography. Hydrography and culture information were acquired from Natural Resources Conservation Service. Hydrography and cultural layers were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

	6	7
	■	13
		17

6 COEBURN
7 SAINT PAUL
13 MOLL CREEK
17 MENDOTA

INDEX TO ADJOINING 7.5 MAPS

DUNGANNON, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 12 OF 17

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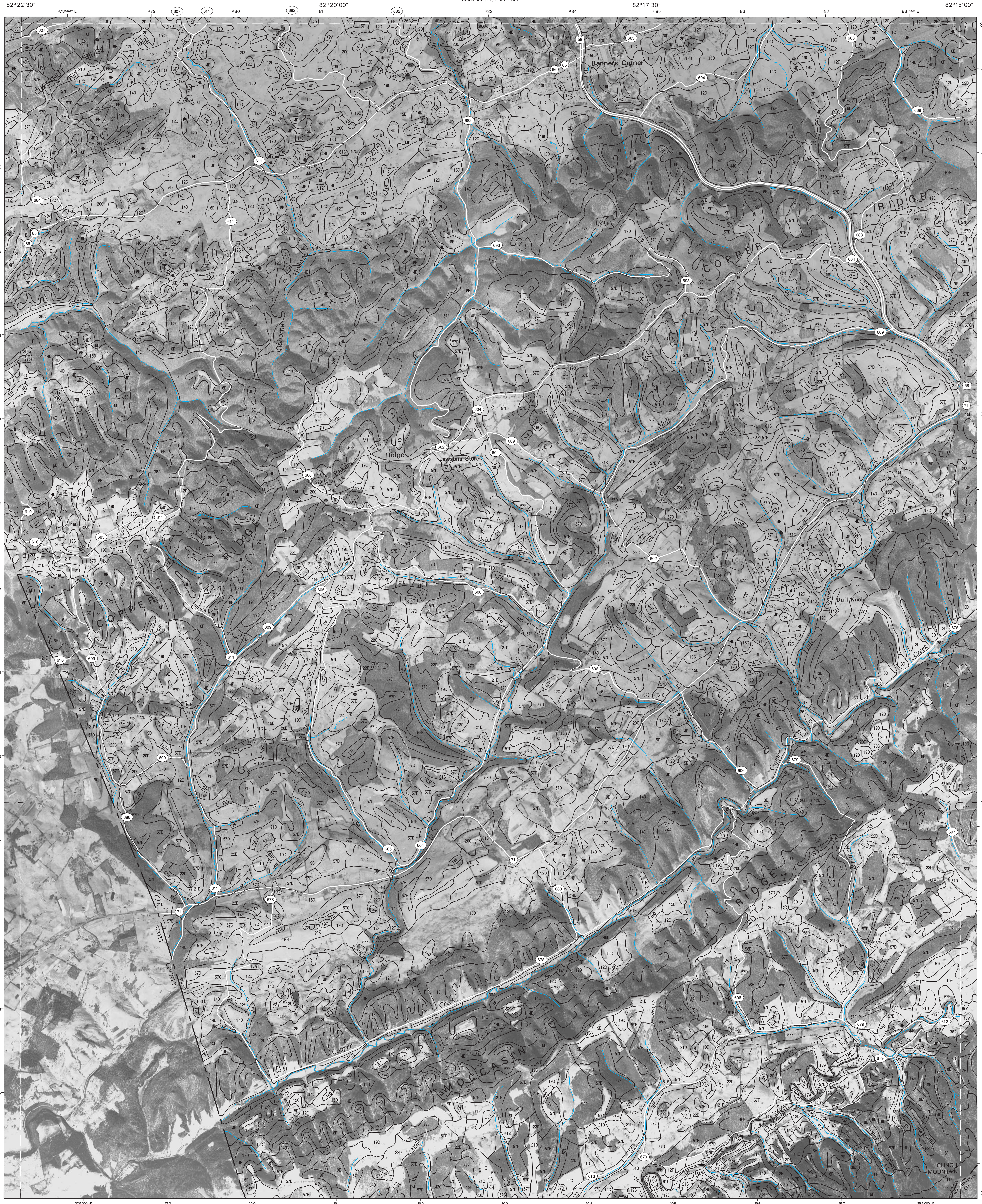
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

RUSSELL COUNTY, VIRGINIA
MOLL CREEK QUADRANGLE
SHEET NUMBER 13 OF 17



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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

6	7	8
12		14
	17	

6 COEBURN
7 SAINT PAUL
8 CARBO
12 DUNGANNON
14 HANSONVILLE
17 MENDOTA

INDEX TO ADJOINING 7.5 MAPS

MOLL CREEK, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 13 OF 17

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UNITED STATES
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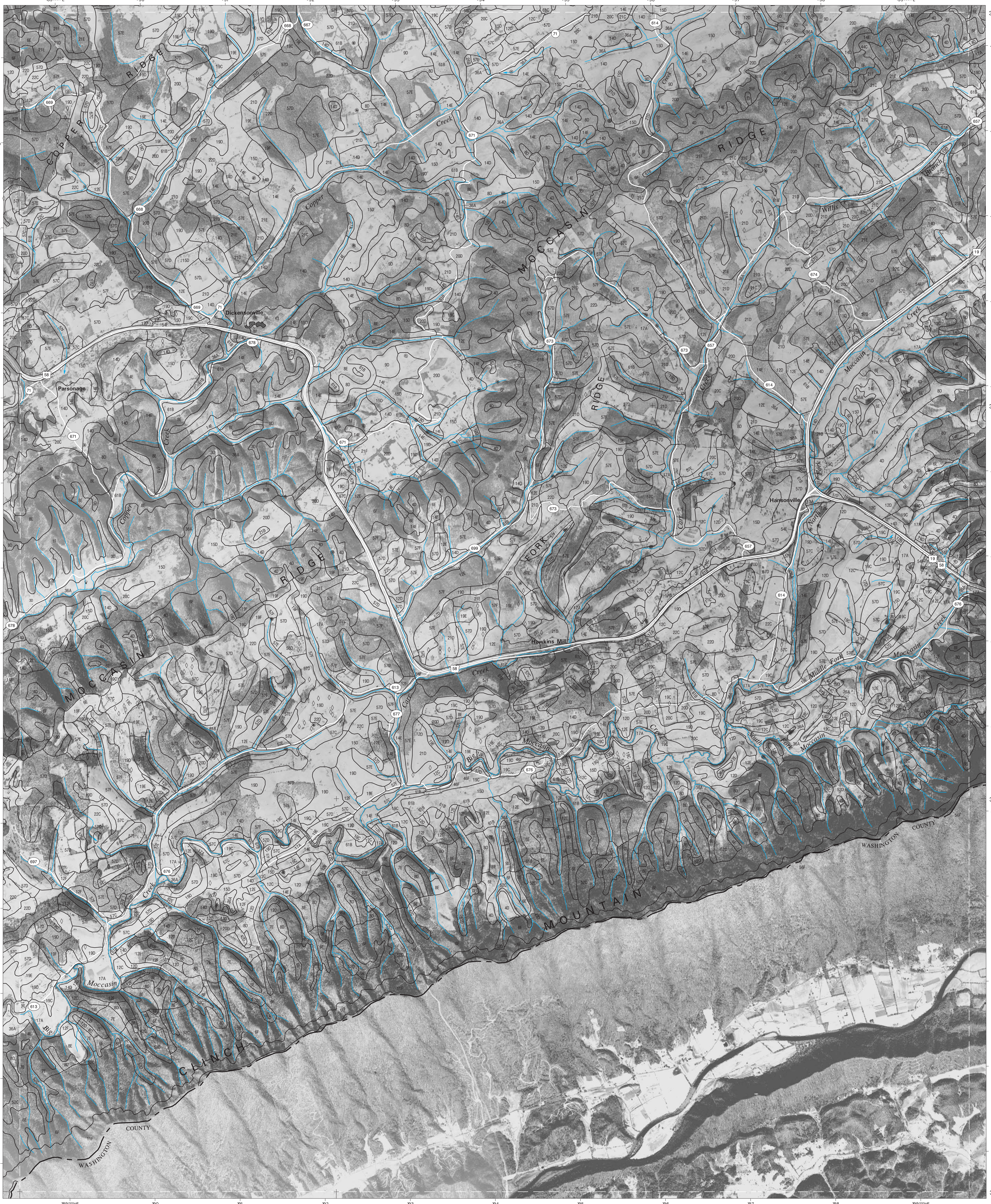
NATURAL RESOURCES CONSERVATION SERVICE

RUSSELL COUNTY, VIRGINIA
HANSONVILLE QUADRANGLE
SHEET NUMBER 14 OF 17

Joins sheet 7, Saint Paul

Joins sheet 8, Carbo

Joins sheet 9, Lebanon



Joins sheet 13, Moll Creek

Joins sheet 15, Brumley

Joins sheet 17, Mendota

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QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

7	8	9
13		15
17		

7 SAINT PAUL
8 CARBO
9 LEBANON
13 MOLL CREEK
15 BRUMLEY
17 MENDOTA

INDEX TO ADJOINING 7.5 MAPS

HANSONVILLE, VIRGINIA

7.5 MINUTE SERIES
SHEET NUMBER 14 OF 17

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UNITED STATES
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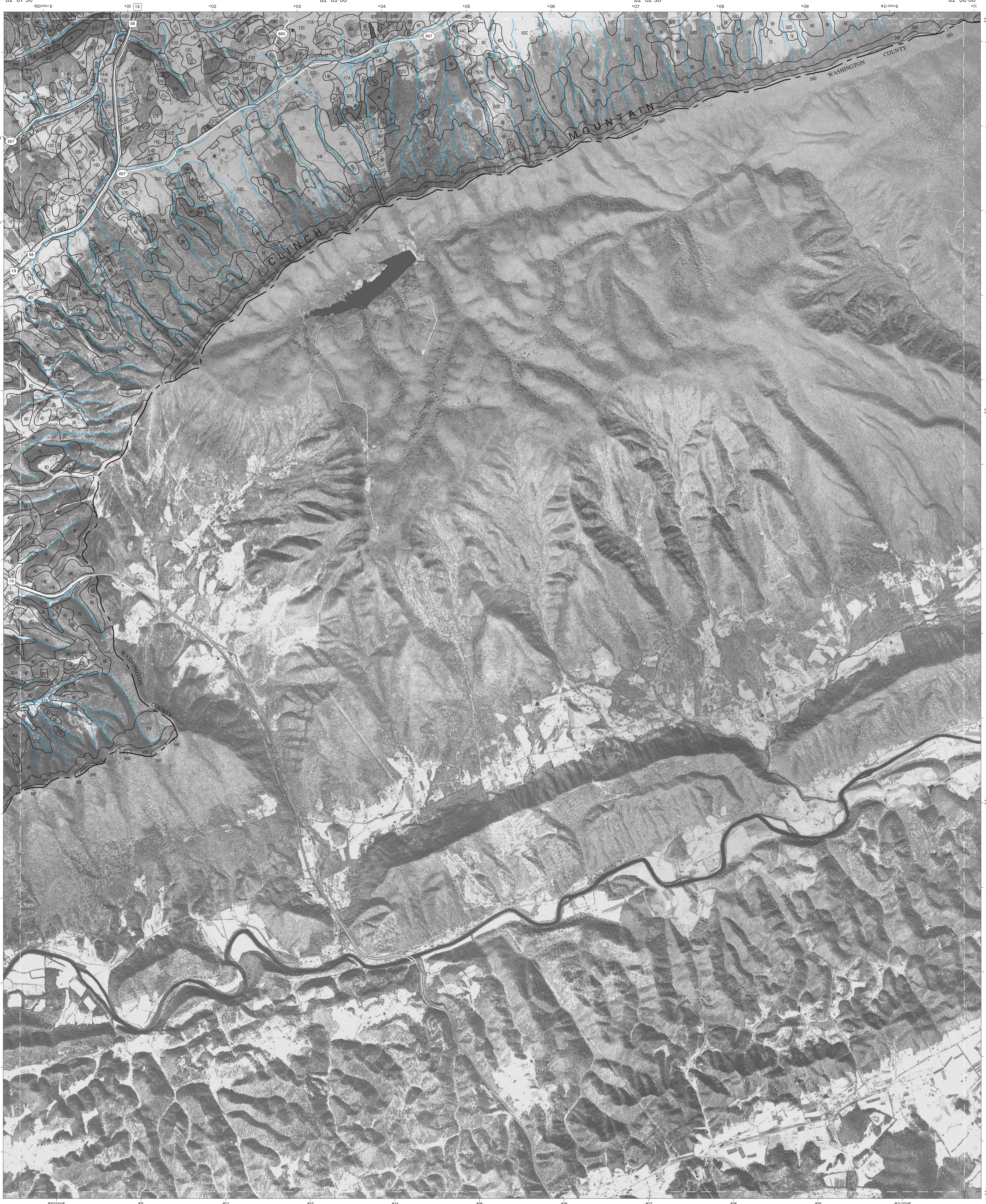
NATURAL RESOURCES CONSERVATION SERVICE

RUSSELL COUNTY, VIRGINIA
BRUMLEY QUADRANGLE
SHEET NUMBER 15 OF 17

Joins sheet 8, Carbo

Joins sheet 9, Lebanon

Joins sheet 10, Elk Garden



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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES: 1 0 1

FEET: 1000 0 1000 2000 3000 4000 5000 6000 7000

KILOMETERS: 1 0 1

8	9	10
14		16

8 CARBO
9 LEBANON
10 ELK GARDEN
14 HANSONVILLE
16 HAYTERS GAP

INDEX TO ADJOINING 7.5 MAPS

BRUMLEY, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 15 OF 17

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UNITED STATES
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RUSSELL COUNTY, VIRGINIA
HAYTERS GAP QUADRANGLE
SHEET NUMBER 16 OF 17

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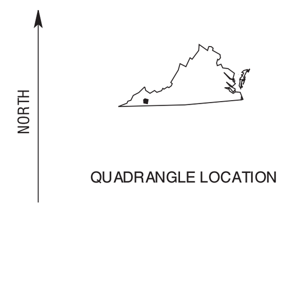

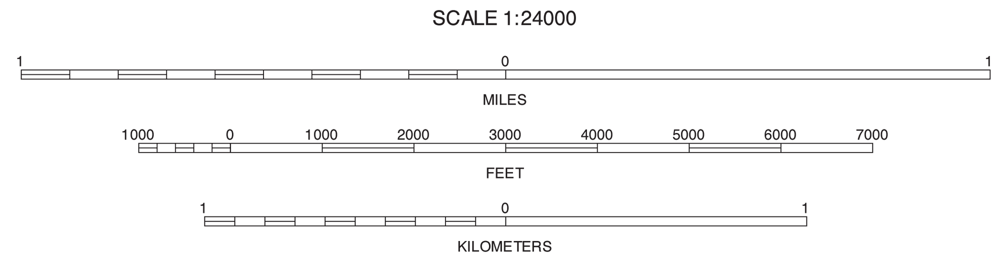

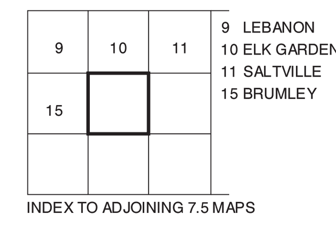

HAYTERS GAP, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 16 OF 17

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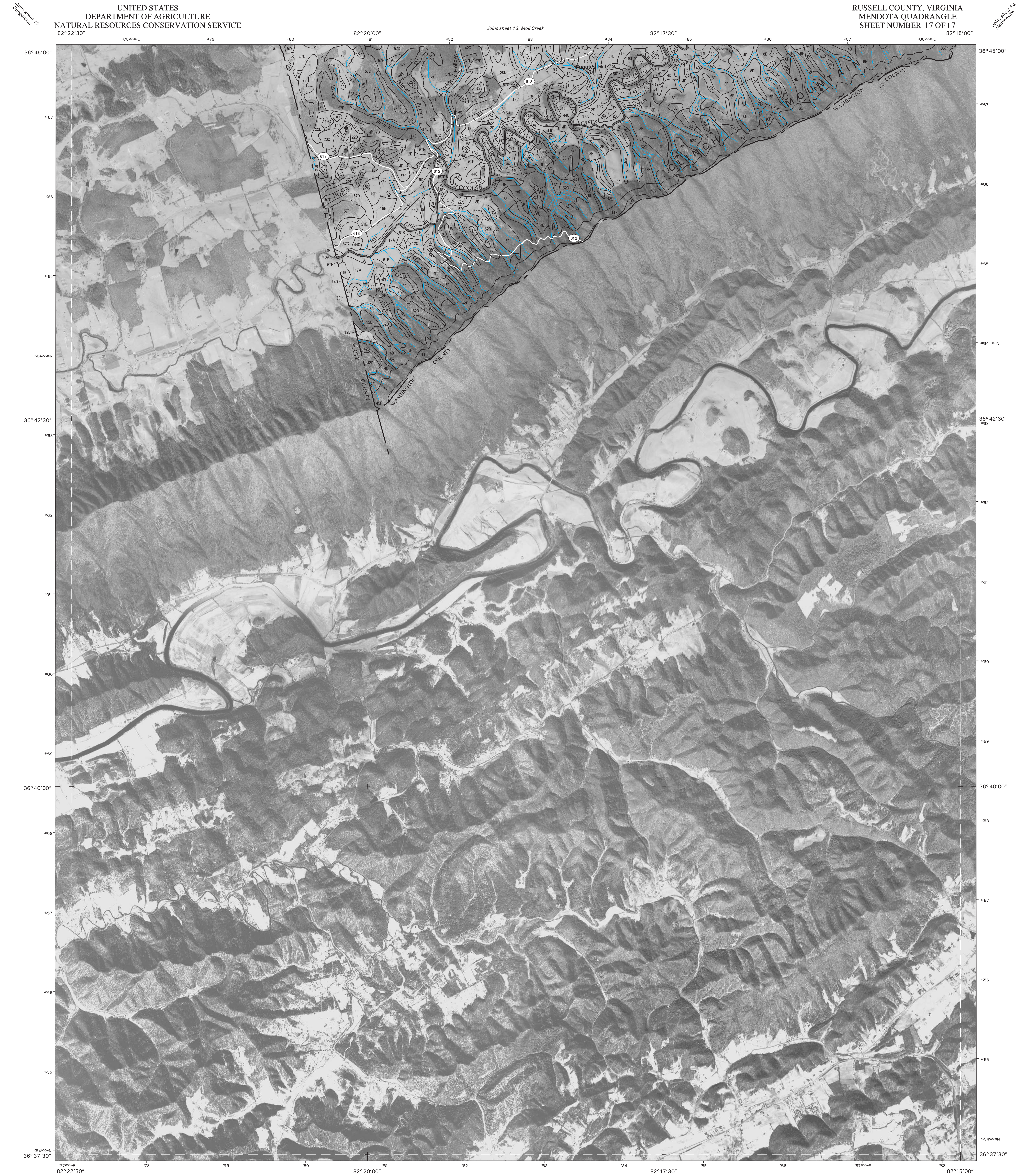
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

RUSSELL COUNTY, VIRGINIA
MENDOTA QUADRANGLE
SHEET NUMBER 17 OF 17



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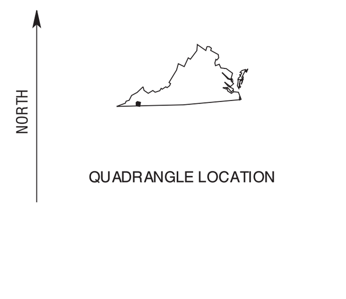
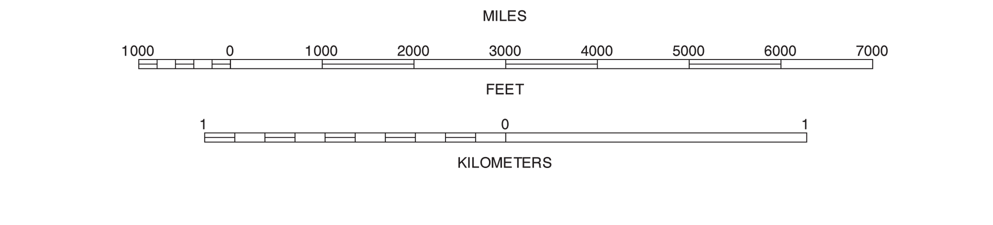
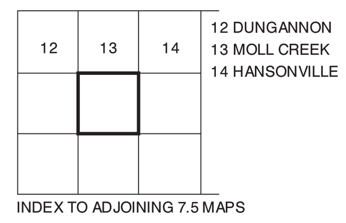


SCALE 1:24000





INDEX TO ADJOINING 7.5 MAPS

MENDOTA, VIRGINIA

7.5 MINUTE SERIES
SHEET NUMBER 17 OF 17

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